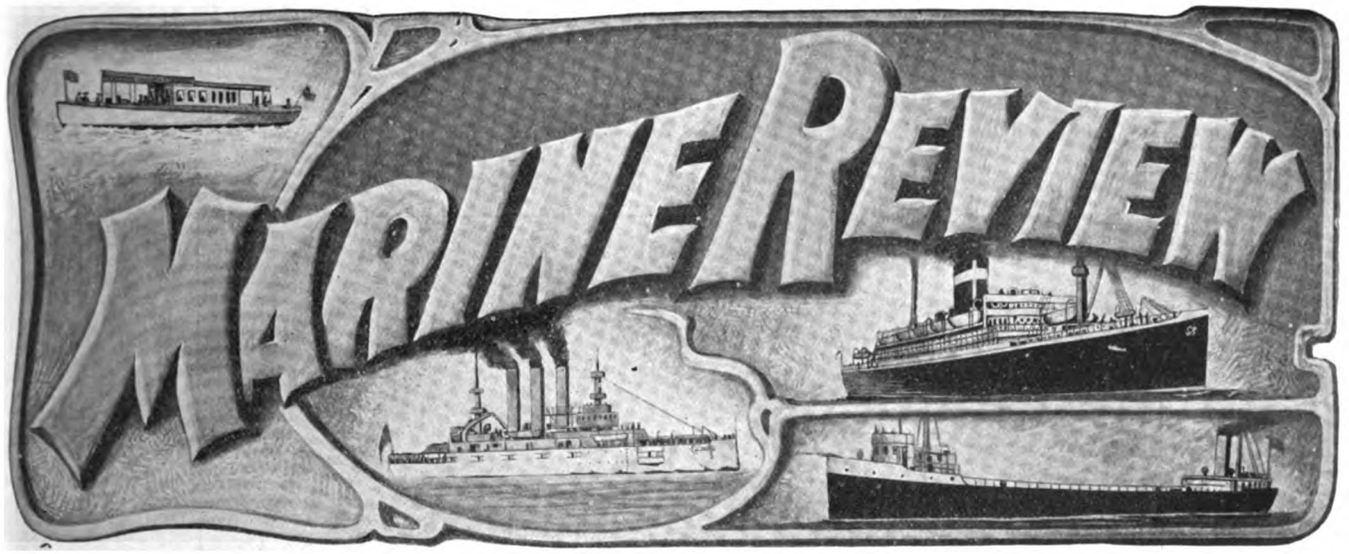

VOL. XXXI. CLEVELAND, O., MARCH 16, 1905. No. 11.

POSSIBILITIES OF ERIE CANAL

Buffalo, March 7.—Lake men are not a little interested in the immediate future of the Erie canal, as not only forming the water connection from the lakes to the ocean, but as the pattern set for all other canals the country over in the matter of further improvement or of allowing to lapse into entire disuse, the latter being the case to a great extent with all of them that do not form an actual short cut that cannot be met by the railroads, or in uniting bodies of water, like the Sault canal, which would be of much less account without them.

The Erie canal forms the needed link, but it is 360 miles long, and its rebuild or even maintenance is a serious matter, for its actual earnings must form a fair percentage on the outlay or it must act as a regulator of rail rates. It is not so very necessary to speculate on these coming values of this waterway, as the experiment is to be tried as soon as the needed work can be done. Col. Symons, the great authority in the case and the man whose approval of the undertaking counts for more than all other opinions together, said the other day that a large amount of work would be done the coming season.

But the canal has a long term of existence before it can float boats larger than the present sad remnant of a fleet. What can it do in that time? The old grain-carrying boats are about gone or they are out of class and will carry nothing but coarse freight, but since it has been agreed to rebuild the canal on a larger scale the boat yards have gone to turning out a fleet of new boats and they will continue to be more or less active right along, for the curious thing about traffic in general also applies to the canal. It has always been possible to carry all the freight on the canal that sought transportation eastward, but as soon as it was not possible for the boatmen to make a living at the business the canal was worthless.

The converse of this is also true. There are seasons when it is possible for the boatmen to make money and yet let most of the business go by some other route. The officials of the New York Central Railroad so control the freight terminals in New York harbor that it is possible for them to make a good thing and yet the route may be slowly starving to death. So long as the carrier in either case was satisfied he cared nothing for the route otherwise. Those who have been interested to see the canal resume the old control of the freight situation were sorry to see the grain business drop so low last season that the showing was less flattering than formerly. Some of them failed to note that the actual need of the canal was proven by the amount of west-bound freight it carried. Freights were very high all the season, the roads finding that it was to their advantage to send as much merchandise to Buffalo from New York by canal as it could carry.

After all, it is the iron traffic that needs the new canal, and it is the canal that is to hold the iron traffic to the lakes. Already the pig-iron trade by canal from Buffalo to Tonawanda is of fair size and it is steadily growing. There was about 14,000 tons of it carried by canal to tide water last season, and it did not all stop at New York harbor, but found its way up the sound to Bridgeport, New Haven and other manufacturing towns, thus sometimes doubling the regular rate of $1.25 a ton to New York. This is a hint of what may also be done at this end of the canal when it is enlarged. So the friends of the enlarged canal are already beginning to see what they predicted, a line of iron manufactories along its whole length and well beyond its ends, not possible with all-rail transportation.

It is never quite known by the canal boatmen what rates the roads make in competition with it. They only know when their rate is so high that they get no freight that it has run up against the rail rate. If they can carry iron now for $1.25 in a 250-ton boat, they ought to make good their promise to reduce the rate to 50 cents when the new canal is ready. This means not only entire control of the situation, but it means such a further building up of towns in the reach of the canal that they will soon come into the class of English manufacturing towns for size and frequency. There may be almost equal possibilities for other canals, just as has taken place of late in Europe.

The dredge built by John W. McIntosh, Port of Warroad, Minn., for the United States government, has been engaged in dredging a channel from the mouth of the Warroad river into the Lake of the Woods. Warroad is a growing town on the Canadian Northern road, popularly called the Minnesota gateway to Canada. The dredge is 100 ft. over all, 26 ft. beam and 8 ft. deep. The machinery consists of two sand pumps of 250 cu. yds. per hour, two 75-H. P. boilers and a pair of stern paddle wheels developing 200 H. P. The dredge has a sand pipe capable of holding 12,500 yds., to be used when the sea prevents it discharging through pipes. The dredge was built under the supervision of Major G. McDerby, corps of engineers, St. Paul, Minn.

President Roosevelt announces that one of the two battleships just authorized by congress will be named South Carolina, in honor of Representative Legare of Charleston, through whose efforts the naval bill passed practically without amendment.

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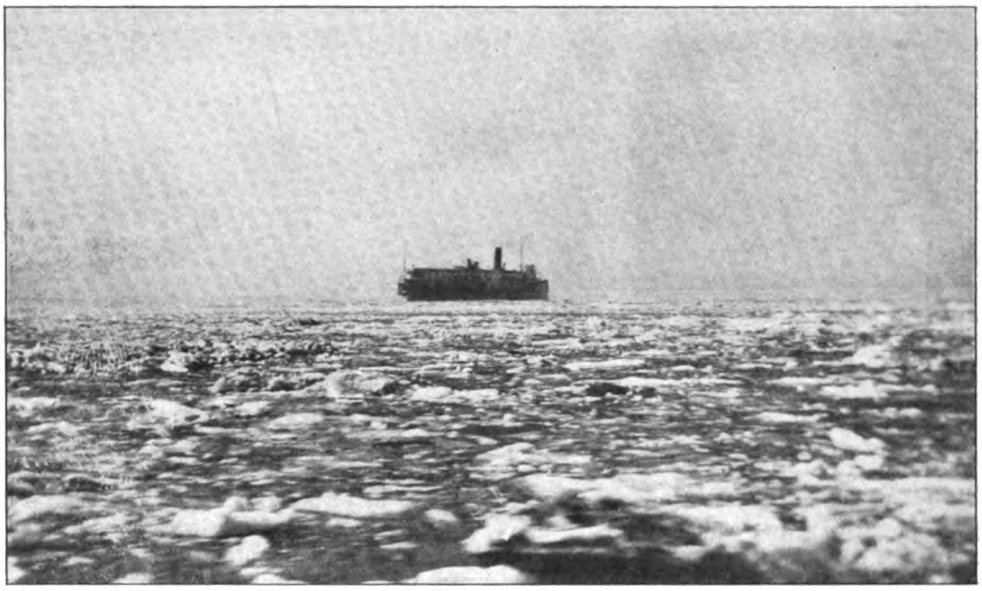
CITY OF BUFFALO IN THE ICE

The accompanying photograph shows the steamer City of Buffalo in the ice off Long Point on her first trip a few seasons ago. It is published simply because it is a very good illustration of the conditions to be met with in early spring navigation on the Cleveland-Buffalo route. Mr. T. F. Newman, the general manager of the company, who was on board at the time, says that it took the steamer eleven hours to negotiate the distance from Long Point to Buffalo, but that having passed through the enormous floes of ice no injury whatever was discovered to the steamer except some slight derangement of the oil devices of her wheels. The view looks placid in the photograph, but Mr. Newman says that the experience was otherwise. The noise made by the crunching ice was frightful and the floes rose to prodigious heights about the steamer. They appear in the photograph as detached pieces but they really were continuous and as the bow of the steamer would force the edge of them down the pressure would lift the entire floe edgewise in the water until it towered high above the steamer's cabins. Since then Mr. Newman has always traveled with a camera.



CONDITIONS TO BE MET WITH ON THE FIRST PASSENGER TRIP OF THE SEASON TO BUFFALO.

HUTCHINSON CASE SETTLED

Buffalo, March 14.—A pleasant recall of the disaster to the big steamer J. T. Hutchinson may be made by noting that the entire proceeding has now passed into history by the recent settlement of all accounts arising from the accident. The published adjustment proceedings makes a volume larger than the average novel and it contains matter of greater interest to many persons than the best romance could furnish. Probably if the astonishment on the faces of crew and wreckers when, on their second return to the steamer on that 5th of December day, after having been twice been driven off by the storm, and found her afloat, could have been photographed on the spot there would have been a group picture equal to any taken of the wreck itself.

The Hutchinson left Duluth in the early morning of November 29, 1903, with 187,000 bushels of flax-seed for Buffalo, and that night fetched up on a pinnacle of rock five miles above Eagle river, as the protest of Capt. Smith relates, more than a mile from shore, a rock till that time entirely unknown to navigators. The money it cost to locate that rock is a fine object lesson in favor of much more government surveying of the lakes than they are getting and it is not the only one of its kind, though at present the most notable one.

The trip of the steamer down the lakes has been told many times. More people watched its progress till the expedition reached Buffalo breakwater on the 21st of December than is recorded of any other trip of that length. And the greatest surprise of all was when she went into dry dock and people looked at the condition of her bottom and side. It was lucky for the steamer, the experts said, that the crew did not know how it looked down there or not one of them would have gone aboard of her.

The cost of repairing the hull of the Hutchinson was $84,703.09, the loss on the cargo was $107,215.14 and there were general average charges besides amounting to $47,072.70, a total of $237,990.93. This is a mighty aggregate, but as the steamer was valued at $205,000 at the time and her cargo was nearly half saved, the effort of the owners and wreckers was not without its reward. It may be added that the final settlements were made with surprising ease and promptness, so that Smith, Davis & Co., whose signature was not placed on the adjustment till Jan. 18, are well pleased with the result.

There is prospect of going on about as before in the grain handling operations here the coming season. Not only are there no reasons for differences with the men, but there are some pretty good ones for not falling out. To be sure the vessel owners are saying that they are paying too much for shoveling and they would be glad if the through grain rate would absorb it, but the elevators have made very little money of late and they cannot be expected to reduce rates now. There is none to look after the matter on the part of the Lake Carriers' association but the executive committee, which is an indication that there is no trouble in sight.

Then the elevators claim to have an argument laid aside, sort of up their sleeve, that is of considerable account. Last year they equipped themselves with the Ogdensburg sweepers, but did not use them, as the vessel owners had no reason for assisting them in beating the scoopers out of part of their work so long as no reduction was made in the shoveling charges. But let the scoopers make any disturbance and in go the sweepers and out go the scoopers, to a great extent at least. It is said that the elevator owners are anxious to use the sweepers, and though they would not be likely to court a scrimmage with the men over them they would be quick to use them to take the place of the men if there should any disagreement arise. So the sweepers may be regarded as yet as nothing more than peacemakers and they may earn their cost in that way.

It may happen that an understanding is reached with the vessel owners and the mates any day, but as it stands now, there is much disposition on the part of the owners to stand out on the ground that so many men have been taken into the union who are not held to be qualified for the position. It is not forgotten how some of the men who had merely become rusty in the service got into trouble when they tried to help out by going back on board during the strike last season. How,

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then, would it be with men who have never had the experience?

Then there will have to be an understanding some day over the practice of shifting the minor sailing men during the season without the consent of the owner. The walking delegates come on board and find men who have been in their places all the season and they say someone else must be helped out now and order the faithful servitor ashore. JOHN CHAMBERLIN.

APPOINTMENTS OF MASTERS AND ENGINEERS

Gilchrist Transportation Co., J. C. Gilchrist, president, Cleveland: Steamers—Case, captain, W. W. Shorkey, engineer, Luke J. Mannion; City of Genoa, captain, Pierre Bouille, engineer, William Brake; City of Naples, captain, W. H. Landgraf, engineer, Peter Mullen; City of Rome, captain, A. W. Holmes, engineer, Peter Britz; Colonial, captain, Joe Dobson, engineer, J. W. Douglass; Cumberland, captain, John Lohr, engineer, Daniel Flint; C. A. Eddy, captain, D. B. Elsey, engineer, Robert Elliott; C. W. Elphicke, captain, J. B. Lyons, engineer, David L. Brown; Gilchrist, captain, G. L. Cudeback, engineer, W. T. Schwacofer; J. C. Gilchrist, captain, E. L. Ennes, engineer, John Parks; F. W. Gilchrist, captain, Charles Hahn, engineer, Henry Jesson; C. C. Hand, captain, Albert Swanson, engineer, H. W. Barden; John Harper, captain, ——, engineer, A. L. Millett; F. W. Hart, captain, Charles Hinslea, engineer, John Fritz; Frank J. Hecker, captain, W. G. Stewart, engineer, ——; Helena, captain, Nelson Brown, engineer, R. O. Butler; Hiawatha, captain, A. Vansler, engineer, George R. Eaton; R. L. Ireland, captain, J. P. Minskey, engineer, C. N. Albee; Jupiter, captain, W. G. Rogers, engineer, C. J. Erickson; Lake Shore, captain, Duncan Buie, engineer, George Zanger; Lansing, captain, Charles S. Ellis, engineer, Frank Hawthorne; Mars, captain, R. J. Walder, engineer, H. J. Hawthorne; Massachusetts, captain, A. D. Vorce, engineer, William O. Butler; Maytham, captain, John Smith, engineer, Peter Schackett; Mecosta, captain, M. J. Madden, engineer, John Conley; Merida, captain, Ed Mooney, engineer, James Balfour; Merrimac, captain, Frank Bertrand, engineer, Frank Ouellette; Neosho, captain, Charles Caughell, engineer, Lewis Fittinger; Neptune, captain, F. A. Dupuy, engineer, Thomas Burns; Neshoto, captain, John Dunn, engineer, Gustav Rogers; Nimick, captain, ——, engineer, D. M. Foster; E. W. Oglebay, captain, Stanton Markle, engineer, A. L. Hatch; Olympia, captain, S. E. Philp, engineer, Peter LaMar; Osbourne, captain, Alex Clark, engineer, R. H. Reynolds; R. R. Rhodes, captain, S. S. Stewart, engineer, Roman Shinsky; George H. Russell, captain, C. T. Gunderson, engineer, Henry L. Mitchell; Saturn, captain, George White, engineer, E. Harris; E. N. Saunders, captain, Peter Full, engineer, A. F. Hogle; R. E. Schuck, captain, F. A. Goodell, engineer, Joseph Berney; Siberia, captain, Ed Benham, engineer, L. T. Annis; H. S. Sill, captain, J. C. Byers, engineer, Clem Clark; Steel King, captain, Ben Mosher, engineer, Bert Beauchamp; Tacoma, captain, Paul Gutch, engineer, T. J. Fowler; C. Tower, captain, C. R. Baker, engineer, Otto Elsholz; Uranus, captain, W. F. Delaney, engineer, T. F. Birch; Vega, captain, A. M. Williams, engineer, Thomas Harringer; Venus, captain, Benson Fox, engineer, Martin Mitchell; Vermillion, captain, B. F. Ogden, engineer, T. F. Higgins; Volunteer, captain, Richard Call, engineer, Peter Robertson; Vulcan, captain, W. G. Slackford, engineer, Robert Dornan; Perry G. Walker, captain, Claud Ennes, engineer, John Seymour; Wallula, captain, Henry Hinslea, engineer, C. T. Martin; C. W. Watson, captain, A. M. Shepard, engineer, R. G. Mabury; J. L. Weeks, captain, M. H. Clark, engineer, T. A. Francombe; D. C. Whitney, captain, L. Miskin, engineer, F. O. Burrows; D. M. Whitney, captain, W. C. Butts, engineer, Charles A. Francombe; George Williams, captain, H. Bennett, engineer, Charles Burns; Lewis Woodruff, captain, Thomas Gibson, engineer, A. MacLaren; A. P. Wright, captain, Frank Ott, engineer, Philip C. Mayer; Yakima, captain, J. S. Jones, engineer, Walter Paterson. Barge Antrim, captain, Ed. Lohr, engineer, William Marshall; Tyrone, captain, George Richards, engineer, George Riggin. Schooners—M. S. Bacon, captain, Henry Elbe; F. A. Georger, captain, William Ziem; Magnetic, captain, Sam Minskey; B. W. Parker, captain, Mathew Ross; Twin Sisters, captain A. A. Monroe; Yukon, captain, Louis Bangs.

United States Transportation Co., Cleveland: Steamers—L. C. Smith, captain, Alex. Forbes, engineer, Robert Leach; Hurlbut W. Smith, captain, J. H. Driscoll, engineer, William Roach; William Nottingham, captain, Sid Le Beau, engineer, John Courtney; George B. Leonard, captain, George W. Pierce, engineer, G. Oldman; Monroe C. Smith, captain, Chas. E. Woodward, engineer, H. J. Gregg; B. Lyman Smith, captain, Frank Boyer, engineer, John Davidson; Wilbert L. Smith, captain, H. L. Mills, engineer, Joseph Taylor; Horace S. Wilkinson, captain, A. W. Stalker, engineer, W. Beckbissinger; Charles M. Warner, captain, F. H. Reid, engineer, George Milne; W. W. Brown, captain, J. H. Sinclair, engineer, Harry Vaughn; William H. Gratwick, captain, James Riley, engineer, Allen Landsphere; A. G. Brower, captain, William H. Blottner, engineer, Edward Reading.

Corrigan, James, Cleveland: Steamers—Bulgaria, captain, N. L. Miner, engineer, H. S. Haynes; Australia, captain, R. E. Donaldson, engineer, John Radford; Caledonia, captain, J. N. Nicholson, engineer, F. Craig; Italia, captain, A. McGregor, engineer, E. Butler; Iron Age, captain, J. H. McCormick, engineer, E. Woodhall; Progress, captain, Thomas J. Brady, engineer, John Maxwell. Barges—Amazon, captain, James O'Flynn, engineer, John Sandwich; Polynesia, captain, A. D. McKay. Schooners—Ashland, captain, Arthur Adams; Tasmania, captain, William Radford; Iron Cliff, captain, Martin Kurth; J. M. Hutchinson, captain, J. C. Hays.

Calbick & Co., J. A., Chicago, Ill.: Steamers—P. J. Ralph, captain, ——, engineer, Joseph Garlarno; J. H. Prentice, captain, R. F. Evans, engineer, James McMillan; Kalaska, captain, Gustav Gunderson, engineer, ——; Oregon, captain, Frank Elliott, engineer, James McHale. Barges—Harold, captain, Helmer Haggenson; Connelly Bros., captain, Carl Johnson; Middlesex, captain, Paul T. Weimar; Halsted, captain, John Sundberg; R. L. Fryer, captain, Emil Christensen; Oak Leaf, captain, A. T. Hanson; S. H. Foster, captain, Fred Weimar.

Sicken, M., Marine City, Mich.: Steamers—George King, captain, William Burns, engineer, William Wicken; S. K. Martin, captain, Hector Brown, engineer, M. Owen; M. Sicken, captain, John Kuhn, engineer, J. McDonald. Schooners—Tertonia, captain, H. Lawrence; Thomas Garson, captain, J. Lawrence; D. Pendell, captain, J. Chartrau; Melvina, captain, H. Holland; Spademan, captain, J. Bond; Grace Whitney, captain, J. Bond; E. J. McVea, captain, F. McMann; Levi Rawson, captain, J. Kobel; St. Joseph, captain, Joseph Leaffrey.

Mutual Transit Co., Buffalo, N. Y.: Steamers—North Star, captain, George Hayward, engineer, W. T. Pike; North Wind, captain, E. B. Blair, engineer, Thomas Jackman; Northern King, captain, E. C. Leath, engineer, August Nagelvoort; Northern Light, captain, Scott B. Worden, engineer, John Dee; Northern Queen, captain, W. H. Stevenson, engineer, P. J. McGinnis; Northern Wave, captain, D. L. Cartwright, engineer, J. J. Darcy.

Kitzinger, Gus., Manistee, Mich.: Steamers—Pere Marquette No. 2, captain, Peter McQuiggan, engineer, Henry O'Connell; Pere Marquette No. 3, captain, Horace L. Sanders, engineer, Ed Hineline; Pere Marquette No. 4, captain, Charles Moody, engineer, George H. Williams; John Schroeder, captain, William J. Carter, engineer, W. D. Cochrane; Mark B. Covell, captain, Ed. D. Skeels, engineer, Ira B. McMillan.

Graham & Morton Trans. Co., Chicago: Steamers—City of Benton Harbor, captain, B. Semons, engineer, L. Sebastian; City of Chicago, captain, W. Russell, engineer, William John-

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son; Holland, captain, John Stewart, engineer, Robert Oliver; Puritan, captain, William Boswell, engineer, James Stewart; Bonita, captain, Charles Morrison, engineer, James McIntee.

Comstock & Sinclair, Duluth, Minn.: Steamers—O. T. Flint, captain, John Randal, engineer, Robert Cameron; Simon Langell, captain, J. A. Stewart, engineer, George Cook. Schooners—Arenac, captain, Wyman Powers; W. K. Moore, captain, Burt Warwick; Interlaken, captain, R. Taylor.

Leatham & Smith Towing & Wrecking Co., Sturgeon Bay, Wis.: Steamers—I N. Foster, captain, Louis Anderson, engineer, P. Curry; Joseph L. Hynd, captain, James Keenan, engineer, Edward Webber; Charles B. Packard, captain, Charles B. Packard, engineer, James Curry.

White Star Line, Detroit: Steamers—Tashmoo, captain, Burt S. Baker, engineer, Winfield Dubois; Greyhound, captain, Thomas Meiklehan, engineer, David Maxwell; City of Toledo, captain, J. J. Stover, engineer, M. J. Gilligan; Owana, captain, ———, engineer, C. H. McCarten.

Michigan Central R. R. Co., Detroit: Steamers—Transfer, captain, J. N. Innes, engineer, A. Barton; Detroit, captain, H. L. Innes, captain, D. S. Black,; Transport, captain, J. R. Innes, engineer, John Cockburn; Michigan Central, captain, J. R. Innes, engineer, Alex. Pirie.

Michigan Salt Trans. Co., Milwaukee, Wis.: Steamers—Pere Marquette No. 2, captain, Peter Guiggan, engineer, B. McMillan; Pere Marquette 3, captain, H. L. Sanders, engineer, E. S. Hineline; Pere Marquette 4, captain, ———, engineer, George Williams.

Lake Ontario & Bay of Quinte Steamboat Co., Kingston, Ont.: Steamers—North King, captain, John J. Jarrell, engineer, O. J. Hickey; Caspian, captain, William Bloomfield, engineer, ———; Aletha, captain, John A. Roys, engineer, C. McSorley.

Holland & Graves, Buffalo, N. Y.: Steamer Mohegan, captain, James Cunningham, engineer, William Schumacher. Schooners—Mingoe and Aloha, captain, James Roberson; John A. Francomb and Annabell Wilson, captain, William McCarter.

Oscoda & Cleveland Trans. Co., St. Clair, Mich.: Steamers—City of Holland, captain, F. J. Meno, engineer, Harry Meno; Pilgrim, captain, Al. Palmer, engineer, Joseph Meno, Jr.; Douglas, captain, M. Trombly, engineer, A. Hamlin.

Marquette & Bessemer Dock & Navigation Co., Conneaut, O. Steamers—Pere Marquette No. 16, captain, George L. Thompson, engineer, G. Van Brunt; Marquette & Bessemer No. 1, captain, R. R. McLeod, engineer, E. Wood.

Canada Atlantic Trans. Co., Ottawa, Can.: Steamers—Ottawa, captain, Alex. Birnie, engineer, ———; Arthur Orr, captain, H. Jaenke, engineer, ———; George N. Orr, captain, Wiliam Baxter, engineer, ———.

Merchants' Line, Montreal, Can.: Steamers—City of Montreal, captain, Arthur Lefebvre, engineer, Fred Hamelin; Cuba, captain, Antoine Monpitit, engineer, Eugene Hamelin; Melbourne, captain, Hiram Vaughn.

Chicago, Saugatuck & Douglas Trans. Co., Saugatuck, Mich. Steamers—Charles McVea, captain, William Turnbull, engineer, Harry Bender; Saugatuck, captain, John Campbell, engineer, Samuel Shaver.

Schlosser, William, Milwaukee, Wis.: Schooners—City of Sheboygan, captain, I. Tellefson; Minerva, captain, H. Peterson; Levi Grant, captain, Nels G. Norem; Wolverine, captain, Charles Hanson.

Livingstone, William, Detroit: Steamers—W. Livingstone, captain, James Doner, engineer, James Morison; Thomas W. Palmer, captain, George F. Stilphen, engineer, Terrance J. O'Connor.

Francombe, J. A., mgr., Hope Trans. Co., Detroit, Mich.: Steamer W. R. Stafford, captain, W. P. Rattray, engineer, John A. Francombe. Schooner Ed. McWilliams, captain, A. R. Sharow.

Lynn, M. J., mgr., Bay City, Mich.: Steamer Lizzie Madden, captain, W. J. Lynn, engineer, A. McGinnis. Barges—Mautenee, captain, John Madden; Noquebay, captain, Andrew Bigger.

Owen, George, Ashtabula, O.: Steamers—Jennie E. Smith, captain, Frank E. Nettleton, engineer, Henry Hess; Stephen Chase, captain, D. W. Nettleton, engineer, Peter Rasmussen.

Monroe, Thomas, Muskegon, Mich.: Steamer George C. Markham, captain, Anton Christensen, engineer, Ambrose Smith. Schooner Lyman M. Davis, captain, Hans Hermanson.

Richards Transportation Co., Cleveland, O.: Steamer Rube Richards, captain, T. G. Simmons, engineer, Fred W. Robinson. Schooner May Richards, captain, Frank E. Reeves.

Pulling, W. J., Windsor, Ont.: Steamer Juno, captain, Archie McInnis, engineer, Sandy Kerby. Schooners—Sligo, captain, John McPherson; Vesta, captain, Norman McDonald.

Pierce, William E., West Bay City, Mich.: Steamer Ogemaw, captain, William E. Pierce, engineer, Aaron Hagadorn. Schooner C. J. Fillmore, captain, John Hagarty.

Louis Sands, Manistee, Mich.: Steamers—Wotan, captain, Jacob Berentsen, engineer, William Brice; Maggie Marshall, captain, A. Olson, engineer, John Peterson.

Argo Steamship Co., Cleveland, O.: Steamer Argo, captain, George L. Cottrell; schooners—C. B. Jones, captain, John Nelson; D. P. Dobbins, captain, Harry May.

MacLachlan Trans. Co., Port Huron, Mich.: Steamer C. F. Bielman, captain, J. W. Montgomery. Barge Mary E. MacLachlan, captain, Alex. Shambleau.

Boekling, G. A., Sandusky, O.: Steamers—A. Wehrle, captain, A. E. Meyers, engineer, A. Stein; R. B. Hayes, captain, Witcher, engineer, F. Stein.

Shoal Water Transportation Co., Mt. Clemens, Mich.: Steamer Norwalk, captain, Frank Goodrow, engineer, Joe Bodore.

Bielman, C. F., Detroit: Steamer Florence B., captain, George Riggs and Capt. Bert Gallins, engineer, Joseph Rosseau.

Belknap & Phillips, St. Clair, Mich.: Steamer—Maud, Capt. Charles Weitzman, Engineer Clinton Trumble.

Lake Shore Stone Co., Milwaukee, Wis.: Steamer—Hennepin, Capt. Chas. D. Ross, Engineer John W. Patterson.

Stephenson, Isaac, Marinette, Wis.: Steamer I. W. Stephenson, Capt. Daniel Wall, Engineer Joseph Nold.

Whitaker, Byron, Detroit: Steamer Byron Whitaker, Capt. James P. Stewart, Engineer Dexter Blauvelt.

England Transit Co., Cleveland: Steamer R. W. England, Capt. R. W. England, Engineer John Booth.

Hoeft, Paul H., Rogers City, Mich.: Steamer C. H. Starke, Capt. Wm. Crosby, Engineer John Lacey.

Republic Iron Co., Cleveland: Steamer—Republic, Capt. Wm. Megarvey, Engineer George Abill.

Michigan Steamship Co., Chicago, Ill.: Steamer—Eastland, Capt. F. A. Dority, Engineer W. P. Eales.

Mathews, J. T., Toronto, Can.: Steamer Haddington, Capt. James Delaney, Engineer R. W. Ross.

Adams, Thomas, Detroit, Mich.: Steamer—Langham, Capt. W. M. Mahon, Engineer, Robert Hains.

Mehl, Edward, Erie, Pa.: Steamer Uganda, Capt. W. W. Wilkins, Engineer C. R. Ogg.

Taylor, M. H., Erie, Pa.: Steamer Niagara, Capt. M. A. Budd, Engineer A. A. Turner.

Sylvester Bros., Toronto, Can.: Schooner St. Louis, Capt. George Williamson.

Seigher, Frank, Cleveland: Schooner V. H. Ketchum, Capt. Dan Wilman.

White, James A., N. Tonawanda, N. Y.: Steamer Three Brothers, captain, Sam Christopher, engineer, George Heath.

Carleton, Eugene M., Cleveland: Steamer H. D. Coffinberry, captain, William Ferguson, engineer, William Dorn.

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Northern Michigan Transportation Co., Chicago, Ill.: Steamers—Missouri, captain, William Finucan, engineer, Thomas Collins; Illinois, captain, Frank Richardson, engineer, Patrick Eustic; Kansas, captain, John Martin, engineer, ——.

Arnold Line Steamers, George T. Arnold, mgr., Mackinaw Island, Mich.: Steamers—Islander, captain, John McCarty, engineer, ——; Sailor Boy, captain, Louis Gondocan, engineer, ——.

Rend, W. P., Chicago, Ill.: Steamers—William P. Rend, captain, A. H. Thompson, engineer, J. Hogan; Panther, captain, E. Evans, engineer, ——.

Arnold Transit Co., Mackinaw Island, Mich.: Steamers—Chippewa, captain, William McCarty, engineer, John Loveny; Elvz, captain, J. B. Mendor, engineer, John Harrington.

Mona Transportation Co., Cleveland, O.: Steamer George Presley, captain, F. C. Folson, engineer, George Masters.

Lyman C. Smith Transportation Co., Cleveland: Steamer Lyman C. Smith, captain, R. J. Lyons, engineer, E. Hull.

Cowle Transit Co., Cleveland: Steamer John B. Cowle, captain, E. T. Rattray, engineer, Charles Couchaine.

Iona Trans. Co., Detroit, Mich.: Steamer Iona, captain, Jerry T. Rose, engineer, M. M. Hill.

Corrigan, John, Cleveland: Steamer Aurania, captain, A. H. Gain, engineer, B. Henry.

Buckley, Edward, Manistee, Mich.: Steamer Edward Buckley, captain, Charles Gnewuch, engineer, Ernest Smith.

Harrow, P. J., Algonac, Mich.: Tow barge Nelson Bloom, captain, J. P. Harrow.

Erickson, Erick, Racine, Wis.: Schooner J. A. Holmes, captain, E. Erickson.

Downey & Co., Robert, Oswego, N. Y.: Steamer Monteagle, captain, George E. Talbot, engineer, William S. Brown.

Chapman, J. B., Cleveland, O.: Schooner Selkirk, captain, O. E. Bullock.

Hahn, J. N., Cleveland: Steamer James H. Shrigley, captain, J. E. Rathbun, engineer, Phil Canton.

Hurley, T., Detroit: Steamer Majestic, captain, M. G. McIntosh, engineer, George Purvis.

Fullum, Walter K., Buffalo, N. Y.: Tow Barge James G. Blaine, captain, Walter K. Fullum.

Parks, O. E., Michigan City, Ind.: Steamer O. E. Parks, captain, O. E. Parks, engineer, Robert Elliott.

Ludwick, Capt. Charles, Port Huron, Mich.: Schooner Hattie Wells, captain, Charles Ludwick.

Dauble, E. B., Tonawanda, N. Y.: Schooner Olga, captain, Edward H. Prill.

NAVIGATING GRAND RIVER

As announced in last week's issue of the Review, after many unsuccessful efforts to navigate the Grand river between Grand Rapids and Grand Haven, Mich., a company has been organized on a basis which bids fair to meet with instant and permanent success. The Grand Rapids & Lake Michigan Transportation Co. number among its stockholders many of the most substantial business men of the city of Grand Rapids. The company has a capital of $50,000 and is promised the hearty support of the shippers of Grand Rapids. They have already made traffic arrangements with one of the leading Lake Michigan boat lines. The run is a daylight one of 40 miles through a picturesque valley. The river ranges from 300 to 1,000 ft. in width.

At one terminal is located the city, of Grand Rapids, the second largest city in the state of Michigan, with 100,000 inhabitants and 500 factories. There is a remarkably heavy freight tonnage out of Grand Rapids by way of Chicago to the west. The total tonnage in and out of Grand Rapids during the year 1904 was 2,000,000 tons. Grand Haven is the other terminal. Adjacent to this point is Spring Lake, a famous summer resort, with numerous hotels and cottages, offering to this boat line a strong and very profitable excursion business. The heavily wooded shores of the Grand river are destined to become a very popular resort for the numerous picnics which have heretofore been handled by the railroads. The class of freight carried the first year will be principally general merchandise.

Mr. W. S. Farrant, general manager of the company, states that they are at present rather doubtful as to whether they will build new boats or purchase second hand craft, and that the decision will rest entirely upon the number and quality of boats which are offered in the near future in response to their advertisements.

LUMBER CARRIERS CLOSE WITH COOKS AND SEAMEN

The Lumber Carriers' association, at a conference in Chicago this week, entered into contracts for the season with the Seamen's union and the Cooks' union. The agreement with the Seamen's union is precisely on terms similar to those entered into by the Lake Carriers' association—that is, the wages and conditions are the same as last year except that ordinary deckhands get $27.50 per month instead of $25 per month until Oct 1, and $37.50 per month thereafter. Wheelsmen, watchmen and lookouts get $45 per month up to Oct. 1 and $05 per month for the balance of the season. The Cooks' union, as usual, made an effort to have women removed from positions aboard ship in order to make room for members of the Cooks' union, but in this was not successful. In a number of cases the women are widows with children, whose husbands have died in service, and owners feel that it would be working a hardship to deprive them of employment. Cooks on board vessels carrying crews of thirteen men and over were granted an advance of $5 per month. They now get $80 per month, while on boats carrying twelve men, $70 is paid, and on boats carrying eleven men, $60.

SAULT CANAL SEMI-CENTENNIAL CELEBRATION

In the last hours of congress the Hon. Peter White of Marquette, Mich., succeeded in getting an appropriation inserted in the sundry civil service bill for $10,000 to defray the expenses of a celebration in commemoration of the fiftieth anniversary of the completion of the first canal at Sault Ste. Marie. Probably no other man in the world could have succeeded in doing this with a congress that was disposed to put the brakes down effectually upon all manner of appropriations. It is a subject for congratulation, however, that he succeeded in doing so, because it would indeed have been a pity to permit the occasion to go by without commemoration of any sort. St. Mary's canal is, in point of tonnage, the leading canal in the world, and the men who built the first canal performed heroic service to the country. A committee is now working with the Michigan legislature to seek an additional appropriation of $25,000 as the Michigan share in the celebration. Undoubtedly if this appropriation is secured the vessel interests of the great lakes will see to it that the celebration is made worth while.

Before contract can be let for the fireboat for the city of Milwaukee it will be necessary to seek an additional appropriation of $4,000 from the council. The lowest bid, that of the Manitowoc Dry Dock Co., Manitowoc, Wis., was $4,000 in excess of the appropriation. The bids were as follows: Manitowoc Dry Dock, $54,000; Great Lakes Engineering Works, Detroit, $57,000; Ship Owners' Dry Dock Co., Chicago, $64,800; Port Huron Ship Building Co., $70,150. The fireboat is to be an entirely new steel boat with complete equipment and outfit, including a new type of water tower which has never been put in a steel boat before. She is also to have a new large Scotch boiler 12 ft. in diameter and 15 ft. long. The old engine and pumps of the fireboat Cataract are to be overhauled for the new boat with entirely new piping.

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DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED OR ASSOCIATED WITH MARINE MATTERS ON THE FACE OF THE EARTH.

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MARCH 16, 1905.

After a great deal of threshing of the subject the rules of the road for the great lakes adopted by the Dominion government are now similar to those for the United States, and will go into effect on April 1. The slight exceptions in phraseology are noted elsewhere in this issue, but the rules are practically uniform. This is greatly to be desired because United States vessels operating in Canadian waters and Canadian vessels operating in United States waters were, in moments of emergency, liable to become confused in distinguishing signals. The changes have been brought about through a conference held between the Lake Carriers' association, represented by Mr. Harvey D. Goulder, and the Dominion officials.

The life of the Merchant Marine Commission, which was appointed to make an inquiry into the state of American shipping in the foreign trade, has been continued until the next session of congress and during the coming summer will probably hold further hearings. It is not the intention to make another tour of the country nor to hold any scheduled meetings, but it will probably give an opportunity to shippers to submit whatever further evidence they may desire to offer. The bill that was drawn by the commission is regarded as a very modest and sensible measure and there is no purpose to alter its provisions in general though they may be changed in slight detail. The bill imposes no tax upon the general treasury but derives its funds from a tonnage tax operative upon all shipping but to be distributed among American ships that observe certain conditions. During the summer the commission will endeavor to maintain a campaign of education so that the people may be generally enlightened upon the subject. In point of fact this was the real good that the commission did during its tour last year, for through its series of hearings it certainly disseminated information widely and it can truthfully be said that more people are now acquainted with the shipping question than ever before.

In June of the present year will occur the fiftieth anniversary of the completion of the first canal at Sault Ste. Marie. So vast has been the progress of the world since that date that it is almost impossible to believe that even so late as fifty years ago Lake Superior was practically an unsailed sea. With the exception of a few little schooners, probably not more than half a dozen, there was nothing on this mighty lake except the birch bark canoe of the Indian and the batteaux of the French voyageurs. What a striking exhibition of progress it would be to have one of the latter-day 10,000-ton ships lying alongside one of these canoes, and yet the contrast, striking as it is, is really a faithful portrayal of the development of the past fifty years. How singularly fitting it is, therefore, that the event which has established navigation between Lake Superior and Lake Huron and which unlocked the rich treasury of the northwest country should be commemorated. Certainly no single act has contributed so much to the material welfare of this country as the building of the Sault Ste. Marie canal, now the leading canal in point of tonnage in the world. Sault Ste. Marie is regarded by the uninformed as being situated in a very remote section of the globe and they cannot comprehend this statement that its tonnage is actually three times greater than that of the vaunted Suez. It so happens, however, that nature was very prodigal in depositing iron ore in the Lake Superior country. These deposits are unrivaled in quantity and form the mainstay of lake transportation as they also form the mainstay of the industrial prosperity of the nation. They contribute fully three-fourths of all the ore that is consumed in the furnaces of the United States and are so readily transported from the mines to the furnaces as to give to the nation an undoubted supremacy in the manufacture of iron and steel. What this nation would be industrially without these deposits is easy to conjecture. It would still be importing its iron from Europe and none of these diversified industries which have enriched hundreds of thousands of people of the United States would exist at all. It is therefore fitting that an impressing celebration should be made of the fiftieth

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anniversary of the completion of this canal. Even the president of the United States himself could well afford to be present. Moreover, the celebration should be made international because Canada has its share in it as well. All praise is to be given to the Hon. Peter White of Marquette, Mich., to whose unflagging perseverance is due the fact that congress recognized the approach of the semi-centennial and made an appropriation to observe it.

LAKE STEAMERS TO BE LAUNCHED

Thicker than autumnal leaves that strew the vales of Vallombrosa are ships leaving the stocks on the great lakes these days. This is hyperbole, of course, and is merely intended to show that the ship yards are putting overboard vessels with more than usual dispatch. The steamer Philip Minch, building for Henry Steinbrenner of Cleveland at the Lorain yard of the American Ship Building Co. will be launched on Saturday of this week. This steamer is 500 ft. over all, 480 ft. keel, 52 ft. beam and 30 ft. deep and is equipped with triple-expansion engines with cylinder diameters 22½, 36 and 60 in. by stroke of 42 in. supplied with steam from two Scotch boilers, 13 ft. 9 in. by 11 ft. 6 in. Her carrying capacity is 8,000 tons.

The Tomlinson steamer Sylvania, building for the Duluth Steamship Co. of Duluth at the West Bay City yard of the American Ship Building Co., will also be launched on Saturday of this week. She is 524 ft. over all, 504 ft. keel, 54 ft. beam and 30 ft. deep. Her engines are triple-expansion with cylinders 22½, 36 and 60 in. cylinder diameters by stroke of 42 in., supplied with steam from two Scotch boilers 13 ft. 9 in. by 11 ft. 6 in. Her carrying capacity is 9,000 tons.

On Saturday, March 25, the steamer L. C. Hanna, building for the Mahoning Steamship Co. of Cleveland at the Cleveland yard of the American Ship Building Co., will be put overboard. This steamer is 524 ft. over all, 504 ft. keel, 54 ft. beam and 30 ft. deep. She is equipped with triple-expansion engines 23½ in., 38 in. and 63 in. cylinder diameters by stroke of 42 in., supplied with steam from two Scotch boilers, 14 ft. 6 in. by 11 ft. 6 in. Her carrying capacity is 9,000 tons. On the same day the steamer Amasa Stone, building for Pickands, Mather & Co. of Cleveland, will be launched at the Wyandotte yard of the American Ship Building Co. This steamer is 545 ft. over all, 525 ft. keel, 55 ft. beam and 31 ft. deep. Her engines are triple-expansion with cylinders 23½, 38 and 63 in. diameters by stroke of 42 in., supplied with steam from two Scotch boilers 14 ft. 6 in. by 11 ft. 6 in. Her carrying capacity is 10,000 tons.

On the same day also, March 25, the Great Lakes Engineering Works of Detroit will launch the freighter James E. Davidson building for the Inter Ocean Steamship Co. of Duluth. This steamer is 524 ft. over all, 504 ft. keel, 54 ft. beam and 30 ft. deep and is equipped with quadruple-expansion engines 18, 27, 40 and 62 in. cylinder diameters by stroke of 42 in., supplied with steam from two Niclausse water-tube boilers, 13 ft. by 9 ft. Her carrying capacity is 9,000 tons.

The engines have been shipped to Chicago for the steamer E. H. Gray, which will be the first to be put overboard of the quartet now building for the Steel Corporation. She will be launched April 8. These steamers are 569 ft. over all, 549 ft. keel, 56 ft. beam and 31 ft. deep. They have triple-expansion engines, 24, 39 and 65 in. cylinder diameters by stroke of 42 in., supplied with steam from two Scotch boilers 15 ft. 4½ in. by 11 ft. 6 in. Their carrying capacity is 10,000 tons.

The American Ship Building Co. is now preparing to lay the keels for the Hutchinson steamer and the Pittsburg & Conneaut car ferry at the Cleveland yard and the keels for the steamer S. M. Clement, building for the Buffalo & Susquehanna Steamship Co. of Buffalo, and the steamer Wm. A. Rogers, building for the Niagara Transit Co., North Tonawanda, N. Y., at the Lorain yard. All four keels will be put down next week.

CAPT. HUTCHINSON ORDERS ANOTHER STEAMER

Capt. Charles L. Hutchinson of Cleveland closed contract on Wednesday of this week with Mr. James C. Wallace, president of the American Ship Building Co. for a steamer for 1906 delivery to be a duplicate of the Amasa Stone, building at the Wyandotte yard for Pickands, Mather & Co. of Cleveland. The new steamer will therefore be 545 ft. over all, 525 ft. keel, 55 ft. beam and 31 ft. deep. It will be equipped with triple-expansion engines, 23½, 38 and 63 in. cylinder diameters by 42 in. stroke, supplied with steam from two Scotch boilers, 14 ft. 6 in. by 11 ft. 6 in. Her carrying capacity will be 10,000 tons. This is the second steamer that Capt Hutchinson has ordered for 1906 delivery and proves that that astute vessel manager has great faith in the continued growth of lake commerce. It is to be noted also that the tendency upon second thought is to give orders for larger and larger steamships and this latest steamer of Capt. Hutchinson is 21 ft. longer than the one which was ordered by him about two weeks ago. Both steamers will be built at Lorain.

CANADIAN AND UNITED STATES RULES UNIFORM

The Marine Review has received from Col. F. Gourdeau, deputy minister of marine and fisheries at Ottawa, a copy of the new Canadian rules of the road for the great lakes, including Georgian bay and the St. Lawrence river as far east as Montreal. These rules are to come into operation on April 1 next and are practically uniform to the United States rules for the navigation of the great lakes. They are the result of a conference held between the Lake Carriers' association, represented by Mr. Harvey D. Goulder, and the Dominion officials at Buffalo last summer. As stated the rules are in practical conformity to the White law, but it would have been more satisfactory if the exact language of the White law had been followed. For instance the White law reads: "Every vessel shall in thick weather by reason of fog, mist, falling snow, heavy rain storms or other causes, go at moderate speed. A steam vessel hearing, apparently not more than four points from right ahead, the fog signal of another vessel, shall at once reduce her speed to bare steerageway, and navigate with caution until the vessels shall have passed each other."

The Canadian rule reads as follows: "A steam vessel hearing, apparently forward of her beam, the fog signal of a vessel the position of which is not ascertained, shall, so far as the circumstances of the case admit, stop her engines and then navigate with caution until danger of collision is over."

Again the White law reads: "In all weathers every steam vessel under way in taking any course authorized or required by these rules shall indicate that course by the following signals on her whistle."

The Canadian rules read: "When vessels are in sight of one another, a steam vessel under way, in taking any course authorized or required by these rules shall indicate that course by the following signals on her whistle."

Mr. Goulder desired the words "in all weathers" inserted in the Canadian rules because that would embrace fogs which the winds "when vessels are in sight of one another" does not. With these exceptions the rules are uniform.

The ferry boat Scandinavia, the last of the fleet of four new boats building at the Newport News ship yard for the Lackawanna railroad, was launched last Saturday.

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FREIGHT SITUATION

Dock companies report that ore is moving rather slowly from docks to furnaces at present, owing to the weather, but they expect that the docks will be in as good shape this year when navigation opens as they were about July 1 last year. This means that the conditions on May 1 this year will be equivalent to what it was on July 1 last year because undoubtedly navigation will open this year as soon as it is possible to navigate vessels. Probably vessels will begin starting out a little after April 15. Engineers in general will begin fitting out their vessels on April 1. An early start is desirable because the quantity of ore to be moved is heavy and the more that can be moved in April and May will lessen the congestion of the summer months, when the movement always reaches its maximum. It is expected that 10,000,000 tons will have been moved between April 15 and July 1. Even this will leave 20,000,000 tons to be moved after July 1, for it is the common belief that shipments will reach 30,000,000 tons during the year. Shippers have sold ore very heavily for 1905 delivery, some of them exceeding their previous maximum records by over 1,000,000 tons. Altogether, independent shippers have sold 13,000,000 tons, so it remains with the Steel Corporation as to whether the total movement is to exceed 30,000,000 tons. The Steel Corporation has capacity to move 19,000,000 tons in its own vessels, but it will not say how much outside tonnage it has chartered. However, as all of the large fleets are heavily loaded up with corporation ore, it is a shrewd guess that it has chartered over 5,000,000 tons, and if it maintains its customary proportion of the total movement it will have to charter about 8,000,000 tons altogether. Probably 15,000,000 tons of ore are under charter at this time. The ore chartering has been done on a basis of 75 cents from the head of the lakes, 70 cents from Marquette, and 60 cents from Escanaba, and these figures appear to have been as freely accepted by vessel owners as they were freely offered by shippers.

While, as far as known, only one leading vessel owner has closed contracts for coal tonnage on the basis of 35 cents to the head of the lake and 45 cents to Milwaukee. Several have given options at that rate and undoubtedly will close contracts when the leading shippers come into the market. The big steel ships will generally be confined to the ore trade exclusively this season, the Steel Corporation stipulating in its contracts for tonnage that the vessels are to run light up the lakes, so that the bulk of the coal movement will be transported in the smaller vessels and will, therefore, make the season an especially active one for them as the coal movement will be heavy. Upper lake docks are reputed to be fairly bare of coal.

The only labor organization that the Lake Carriers' association has now to deal with is the union of firemen, oilers and water tenders. The executive committee of the Lake Carriers' association will meet representatives of this union on Tuesday next and the expectations are that satisfactory arrangements will be made with the union upon last season's scale of wages. Following that will be the important conference between the dock companies and the dock laborers. Last year's wages of 13 cents represents a decrease of 7½ per cent over the scale that obtained the year before. The dock managers will endeavor to continue last year's scale throughout the coming season. Unloading charges for vessels will not be fixed until this conference is satisfactorily closed.

President Keefe of the International Longshoremen's association is represented as saying that the new Lake Pilots' association has enrolled 70 per cent of the mates on the great lakes. If this is so it has not interfered with the mates making individual contracts with masters, for all the masters of the leading fleets report that they are having no difficulty whatever in closing with the mates.

IN DEFENSE OF CANADIAN OFFICIALS

Editor Marine Review: In a recent issue, Dec. 10, 1904, the American Syren & Shipping publishes what the editor states in his head line is an "interesting letter from the former wreck commissioner of the dominion, who resigned because his decisions were interfered with by politicians." Well, to say the least, this is an interesting letter, but to an unbiased reader, such as the writer claims to be, the letter seems a medium whereby Capt. Salmon can vent his spleen on the dominion government and its officials with whom he has come in contact. In the short acquaintance that I have had with Capt. Salmon I found him a gentleman, and it is not with his personal conduct that I wish to deal with in this letter, but simply with a few of the statements that he has made solely with the intention of doing an injury to others who may not feel themselves in a position to speak on their own behalf.

In his letter Capt. Salmon states that "the office of wreck commissioner for two years previous was administered by an official who did not possess the necessary ability and experience, etc." In reply to this statement permit me to say that the experience that Com'dr Spain has had during the past fifteen years would, I submit, specially fit him for the duties of this office and it is a libel on his ability to state that he could not pilot a ship's position on a chart. The writer has seen a good deal of Com'dr Spain in the last fifteen years and he is, in my judgment, the first imported product of the British marine service who has the ability to fill his position and the common sense and gentlemanly behavior necessary in dealing with others of the same profession as himself. I am not asking any favor from Com'dr Spain, but I think it but justice to pay this tribute to his character and ability. Permit me to say, sir, that the writer has had the honor of serving as wreck commissioner on several occasions when loss of life had occurred on inland waters and holding as I do certificates for both foreign service and the great lakes I submit that my opinion in matters of this kind should at least bear as much weight as the opinions of Capt. Salmon or any other mariner. When serving as wreck commissioner the court must be guided by the existing law and in Capt. Salmon's letter he intentionally avoids all reference to the wreck and salvage act. For instance let me quote from a portion of his letter in which he condemns Com'dr Spain's conduct in holding enquiries. Capt. Salmon states: "Further than this, by unheard of proceeding all decisions arrived at were submitted to the minister of marine and his deputy before being rendered, thus entirely robbing the court of its fundamental principal, etc." Now the wreck and salvage act of 1886 upon which all investigations were made until the passing of the new act last year reads as follows: Section 12, "Upon the conclusion of every such investigation or as soon afterwards as possible the court or tribunal shall send to the minister a full report upon the case investigated, together with the evidence and its judgments, and opinions thereon, and such observations as the court or tribunal thinks fit to make, and shall state in open court the decision to which it has come with respect to canceling or suspending any certificate and the minister of marine and fisheries shall upon the receipt of the evidence and the opinions of the court thereon, after due notice has been given and a copy of the opinion of the court has been supplied to the person interested or his agent, if he is found, confirm, alter or set aside the judgment as he sees fit and his decision shall be final, etc."

Now a wreck commissioner could hardly lay claim to having such legal training as would warrant his rendering a verdict which could not be questioned, and the act gave the minister the power and opportunity to submit this verdict to the judgment of the justice department. Then why should Com'dr Spain be held up to ridicule because he followed out the instructions laid down in the act? And again, if it transpired that the aids to navigation or the difficult navigation

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of the St. Lawrence route was found to have contributed to the accident why should Capt. Salmon or any other wreck commissioner have the right to publicly advertise this as he wished to do, to the great detriment of our St. Lawrence route? Would it not answer the purpose for the department to be made aware of such necessary improvements when remedy might be made by the chief engineer and others interested, but you can see in this statement that Capt. Salmon simply desired to rap Col. Anderson (the chief engineer) over the knuckles. Well, the good work done by the department and its chief engineer in improving the St. Lawrence route during the last four years is all the answer that is needed.

The next head that seems to rise above the horizon and which Capt. Salmon seems ready to strike is no doubt the Hon. Robt. Bickerdike, and his able work in connection with marine matters at the port of Montreal and the River St. Lawrence below Montreal has long since proved to every marine man interested that the honorable member understands and is more interested in the marine trade of Montreal than Capt. Salmon or any other newcomer could be. It is true, as Capt. Salmon states, and I am sorry to have to agree with him on this point, that some time assessors are appointed to assist the court who have not very much experience or ability in matters of this kind, but as long as Capt. Salmon was chairman of the court it was not necessary to have any more knowledge on the bench and I am given to understand he would not listen to or allow assessors to assist him in framing his verdict. If any more evidence of this is needed just notice how he refers to Capt. R. S. Clift when he states in his letter that "Capt. Clift's ignorance of his profession was profound, and whose conduct in court such that I had frequently to caution him and on one occasion was constrained to threaten him with expulsion, etc." I do not believe there could be found a judge on the superior court bench who would use such language as this. What right had Capt. Salmon to expel one of his assessors? The czar of Russia might undertake such work, but I do not think such conduct would be upheld in Canada. The writer has known Capt. R. S. Clift for about twenty years and has always found him courteous and painstaking in all matters with which he has had to do, anxious to do what is right and with a fund of information, ability and experience possessed by very few of the marine men which it has been my pleasure to meet. It is true that Capt. Clift would make more friends if he was of a pliable character, but I cannot understand Capt. Clift acting as a wooden man or figure head in any court to which he was appointed. I know of assessors who could not pass a second mate's examination. I do not know anything about any quarrel between Capt. Clift and the ex-wreck commissioner, but I do know that Capt. Clift knows his business as a marine surveyor and inspector. It is not my intention to offer any opinion or objection to Capt. Salmon's decision in the Canada-Cape Breton case. The matter is still before the courts and will be thrashed out without any assistance from the writer, but I will say in justice to Capt. Salmon that I believe he had the ability and knowledge to enable him to decide who was at fault in the navigation of those two vessels, but in all the published reports, including Capt. Salmon's letter, I can find nothing that calls for censure or criticism in the actions of the deputy minister or minister of marine.

Section 25 of Chap. 35—1 Edward vii, the act under which this investigation was held, reads as follows: "The minister may order the investigation to be reheard—and he shall do so (a) if new and important evidence which could not be produced at the investigation has been discovered; (b) if for any other reason there has in his opinion been ground for suspecting that a miscarriage of justice has occurred. 2. The minister may order the case to be reheard by the court by whom the case was heard in the first instance."

Then why should the minister not have the right under the above section to delay the rendering of judgment until new evidence was introduced? Surely that is common British fair play and it would seem to the writer that Capt. Salmon was not fit for his position if he failed to understand the meaning of this section of the act. If the boat owners of Canada were put on the mercy of Capt. Salmon without any higher tribunal to appeal to I am afraid they would be in a bad predicament and I would not think much of a department that would give any such power to a wreck commissioner as Capt. Salmon seems to indicate he possessed.

In the latter part of Capt. Salmon's letter he tries to excuse himself for the way he addressed Mate McNeil of the Cape Breton. I have not a verbatim copy of the evidence before me, but as published in the press the question from Capt. Salmon was "If you saw a green light on your port bow, what would you do?" McNeil's answer was "that he would starboard." I do not know what other answers given by McNeil led Capt. Salmon to believe the latter incompetent, but I do not see anything wrong in this answer, and any ordinary seaman could place a vessel in such a position as will warrant the steamer starboarding to keep clear of a green light seen on her port bow.

With reference to the sarcastic remarks in Capt. Salmon's letter with reference to the ability or duties of the department of marine, I have nothing to say. I have been examiner of masters and mates for about fifteen years and while I am willing to give every credit to foreign service masters and others who like Capt. Salmon have been endeavoring to assist our merchant marine, I would like to call his attention to the fact that we have on the great lakes a class of men, very few of whom have seen salt water and yet they handle their ships with safety up and down the narrow channels of our lakes and rivers during the darkest nights with a skill that is not equaled in any part of the world and with a freedom from accident that is worthy the notice of every salt water sailor.

Yours truly,

THOMAS DONNELLY.

Kingston, Ont.

MEAN STAGES OF WATER

The gage records of the United States lake survey show the following mean stages of water above mean sea level for February, 1905:

	Stages during Feb.	Higher than during same month last year.	Lower than during same month last year.	Higher than during Feb., 1895.	Lower than during Feb., 1895.
	Feet.	Feet.	Feet.	Feet.	Feet.
Lake Superior	602 17	.....	0.15	.....	0.11
Lake Michigan	580.13	0.27	.....	0 33	.....
Lake Huron	580 30	0 38	.....	0.46	.....
Lake Erie	571.01	.....	0.27	0.01	.....
Lake Ontario	245 59	0.54	.....	1.20	.....

Present fall Lake Huron to Lake Erie, 0.65 foot more than year ago.

Mr. C. H. Westcott, supervising inspector at Detroit, has decided that an increase of tonnage is not a raise of grade. This is of interest at this time owing to the large number of vessels of increased tonnage that are coming out and which will of course necessitate the promotion of a number of engineers from smaller boats. The local inspectors at Grand Haven have refused to examine Martin Layman for an increase of tonnage on the ground that he had not received the necessary experience. Mr. Westcott holds that Mr. Layman is eligible for an examination for increase of tonnage, the rule under which the local inspectors acted, referring to grade and not to tonnage.

The Lake Erie Ore Co. of Cleveland was incorporated last week with a capital stock of $100,000.

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GETTING READY FOR HEAVY ORE SHIPMENTS

Duluth, March 14.—Dock work at the head of the lakes for the increased business expected in iron ore this year is well along and should be nearly completed by the opening of navigation. There have been unexpected delays from the accident last week at the Duluth, Missabe & Northern No. 1 dock, several bents of the approach to which went out, as the result of too heavy weighting on parts of the structure that had been partly torn down. This approach was being rebuilt and strengthened for the new year. At No. 3 dock, which is being doubled in size, the work is on schedule time, and should be completed by May, or soon after the beginning of heavy lake business. No. 3 dock of the Duluth & Iron Range road is getting on fast, and will be ready by May 15. It is being lengthened and heightened to fit modern conditions, and is very heavily braced. The tendency is toward more longitudinal bracing in all ore docks, especially since the injuries to docks by train stresses, that two years ago necessitated costly repairs to one of the Duluth & Iron Range docks, and has now driven the 73-ft. dock of the Great Northern road 26 in. out of plumb. The outward pressure on an ore dock, when air is applied quickly to an ordinary train of ore, is about 2,500,000 foot lbs., and this is repeated hundreds of times daily the season through. Two years ago the Iron Range people suddenly found their water pipes, running the length of the dock, snapped apart in some unexplained manner. Investigation found that the entire dock was leaning forward several inches from the foundation piling. It was an immense undertaking to separate sections of the dock, wedge and jack it back and insert additional longitudinal bracing of the heaviest character. The Great Northern road will probably have the same task on its No. 3 dock, which is even higher and therefore more subject to misalignment than the Duluth & Iron Range structure. There is an effort on the part of all dock managers to diminish the amount of switching on docks and prohibit the entry of the big locomotives, as well as to ease switching by forcing trainmen to put the air on more easily. The longitudinal strain against one of the structures which have their moving loads 100 ft. or more above their solid foundations, and their permanent loads more than 50 ft. up, is simply terrific and can scarcely be appreciated.

Equipment orders for the head of the lake ore roads have been increased materially of late. The Duluth & Iron Range and Duluth, Missabe & Northern have both taken the options they held for more cars and locomotives and now have 800 and 1,300 steel cars and nine and twelve consolidation locomotives, respectively, to come this spring. The Great Northern has 350 cars and the Lake Superior & Ishpeming has 150 cars and six engines. These latter cars are of 112,000 lb. capacity, the rest of 100,000 lbs., but are subject to overloads of 10 per cent., and usually average about 106,000 lbs. The Duluth, Missabe & Northern is now putting in an all-steel automatic scale, the first of its kind. This is a Fairbanks, and is to load and register the ore trains while they are continuously passing over it. The Duluth & Iron Range is building up its ore yards for new No. 3 dock, and has three gravel trains running continuously. All three Mesabi range roads are laying new double trackage, or adding materially to their long passing tracks, to such an extent that they have virtually double lines. The Great Northern has two distinct lines to the Mesabi range from its dock terminals. The Duluth, Missabe & Northern is completing a cutoff from its Hibbing line to Shaw on the main line, 12 miles in length, and it is probably to build a 30-mile line from Hibbing to the Mississippi river, along the ore bearing formation. This latter is in order to handle the ore that is coming to it from the Canisteo, Arsturus, Diamond and other mines. On account of this large additional business from the western end of the range, all ore from Eveleth mines will go to Two Harbors, and it is quite possible that the Duluth & Iron Range will build into the Mountain Iron mine and take the 1,000,000 tons from there to Two Harbors also. This change is a matter of interest to vessel men in the ore trade.

Work on the old No. 1 dock of the Chicago & Northwestern at Ashland is well along and should be done by May 1. This is being widened and raised so that the bottom of pockets will accommodate modern freighters.

The Wisconsin Central road is doing its part for a heavier ore traffic by making a solid fill over White river, on its ore line. This has been a tremendous timber trestle, 110 ft. high, and has been a dangerous place for years. A great concrete arch, 350 ft. long, has been built for the river and several gravel trains have been working on the fill for months.

CHICAGO GRAIN REPORT

Chicago, March 14.—The first of 1905 wintered fleet, chartered very recently at 2 cents, Buffalo, corn, establishes what is expected to be about the maximum rate basis, viewing it that the natural opening of navigation will take place about one month hence. E. J. Fleming & Co. report that vessels are now in some further demand, although to this time the attitude of both shipping and vessel interests in way of contracting is rather indifferently inclined.

Rates at and east of Buffalo have been established at 3½ cents for corn, but with the added cost of lake haul, the through export basis from Chicago is not in immediate favor against the 13½ cents per 100 lbs. all-rail basis of Omaha to New York. However, this Nebraska corn through basis is set for expiration at April 1, and it looks that local stocks will be sufficient in point of quantity, connected with the comparatively improved cash situation at eastern markets, to develop a fairly interesting situation in lake traffic out of Chicago.

Heretofore, in these columns, the crop of 1904 corn was noted to be approximately 2,500,000,000 bu.; in the light of heavy shipments during the past winter via all-rail lines to New Orleans and the east, the report of United States department of agriculture on grain reserves in farmers' hands, as of March 1, 1905, may especially interest the lake carrier. The comparison with the previous year follows:

	Wheat.	Corn.	Oats.
Crop of 1905.....	111,000,000	954,000,000	347,000,000
Crop of 1904.....	132,000,000	839,000,000	273,000,000

The immediate stocks of grain in local elevators reported in the following quantity:

	This week.	Last week.	Same week last year.
Wheat	3,496,000	3,596,000	5,607,000
Corn	8,196,000	8,393,000	8,156,000
Oats	4,437,000	4,124000	5,599,000
	16,129,000	16,113,000	19,362,000

DULUTH NEWS NOTES

Duluth, March 14.—The Lake Transit Co., capital $500,000, has been incorporated by G. A. Tomlinson, E. H. Eddy and W. H. Stanford of Duluth. Mr. Tomlinson is well known as a leading vessel man and Mr. Stanford is an attorney. Mr. Eddy is a prominent lumberman and has been interested with Mr. Tomlinson in shipping for some time.

Officers, agents and others connected with the transportation department of the Mutual Transit Co. have adopted an interesting innovation in meetings that aid them in getting acquainted with each other and with the company's facilities for business. The first western one of these meetings was held at the head of the lake last week. The visitors inspected the docks and quarters of the company here under the guidance of F. W. Winship, its Duluth agent. Those present included W. E. Lloyd and H. S. Noble of Buffalo, acting superintend-

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ent and general freight agent; L. W. Lake of New York, general eastern agent; P. H. Divers, Philadelphia; W. B. Riddle, Buffalo; R. S. Hart, Cleveland; R. D. Peck, C. W. Robinson and C. B. Baker, Minneapolis, and some others.

The Zenith Dredge Co. has been incorporated here with $20,000 capital, and with R. B. Whiteside, A. S. McDonald and D. D. Murray as incorporators. It will do a general dredge and marine contracting business.

AROUND THE GREAT LAKES

The Munising Paper Co. proposes to build two new docks at Minnesota during the coming summer.

Preliminary work on the extension of the new south pier at Superior entry, Lake Superior, has been begun.

Dry dock No. 1 at Buffalo is being put in condition to receive the steamer Sevona, which is to be lengthened 72 ft.

The Saginaw Bay Transit Co. of Cleveland has bought the steamer D. Leuty and the schooner R. Botsford from Capt. John C. Pringle, St. Clair, Mich.

Mr. G. A. Tomlinson of Duluth will name the hopper bottom steamer building for him at the plant of the Great Lakes Engineering Works the Hoover & Mason.

Capt. James Corrigan of Cleveland has sold to James O'Connor of Tonawanda and others the barges F. G. Ewen and J. I. Case. They will be managed by John J. Boland of Buffalo.

The steamer Iron Duke, which burned off Charlotte, N. Y., has been accepted by the underwriters as a total loss, and has been turned over to Capt. Harris W. Baker of Detroit, who raised her.

At a meeting of the board of directors of the American Ship Building Co. on Wednesday of this week the usual quarterly dividend of 1¾ per cent was declared upon the preferred stock of the company.

The steamer Lakeside opened navigation last week between Sandusky and the islands. She plowed through ice ranging in thickness from 14 in. to 30 in. with comparative ease. The Lakeside, however, will not attempt to make Put-in-Bay for several days.

It will be of interest to vessel owners of the great lakes to know that the steamboat inspection tax at present imposed upon United States steamers plying to and from Canada is to be abolished after April 1 next. Notice to this effect has been transmitted to the collectors of customs at Canadian ports. United States steamers plying in Canadian waters will still be subjected to Canadian steamboat inspection as heretofore, but, however, without charge.

Lieut. Col. Davis, government engineer at Detroit, opened proposals last week for maintaining a dredging plant in Lake St. Clair for removing shoals. The following proposals were submitted: Lake Superior Contracting & Dredging Co., Duluth, $25 per hour for dredge with capacity of 175 cu. yds. per hour; Lake Erie Dredge & Dock Co., Buffalo, $22 per hour for dredge with capacity of from 125 cu. yds. to 150 cu. yds. per hour; Muir-O'Sullivan Dredge & Dock Co., Port Huron, $14 per hour for dredge with capacity of 80 cu. yds. per hour.

As announced in the last issue of the Review the Booth Line of Chicago has purchased the steamers of the White Line Transportation Co. of Duluth, and will at the opening of navigation operate them as a part of the Lake Superior division. The purchase does not include any of the White Line company's dock properties at Duluth, but carries with it the entire business of the line. The Booth Line is now in position to afford the following service on the great lakes: North Shore Lake Superior division: A daily service between Duluth, Port Arthur, Fort William, Isle Royal, and intermediate ports. South Shore Lake Superior division: Bi-weekly service between Duluth, Houghton, Hancock, Marquette, Sault Ste. Marie and Mackinac Island, calling at intermediate ports. Sault-Michipicoten division: Bi-weekly service between Sault Ste. Marie, Batchawana Bay, Michipicoten harbor and Michipicoten island, with intermediate points. Georgian Bay division: Bi-weekly service between Owen Sound, via the north channel of Mantoulin island, calling at all intermediate ports to Sault Ste. Marie. The steamers of this division will call at French river and Byng inlet, eastbound interchange of freight and passenger traffic between the south shore Lake Superior division and the Georgian Bay division will be made at Sault Ste. Marie. The steamers of this company are as follows: America, Easton, Bradshaw, Bon Ami, C. W. Moore, Soo City, Manitou and Caribou.

PERSONAL

Charles Hibbard, the general superintendent of the West Shore and Minnesota ore docks at Buffalo operated by Pickands, Mather & Co. of Cleveland, has resigned to accept a position with the Standard Oil Co. When they heard of his resignation, the men employed by Mr. Hibbard presented him with a gold watch set with diamonds.

Peter Jensen has been appointed captain of the Evanston life saving crew. Capt. Jensen entered the service at Pentwater, Mich., in 1886, and has since served at Ludington, Olivet and South Haven.

William A. Prime of the firm of Charles E. & W. F. Peck, marine insurance brokers, 1115 Royal Insurance building, Chicago, arrived in New York, March 4, from a visit in Europe.

Mr. Harvey L. Jester, agent of the Lake Seamen's union at Detroit, has resigned for the purpose of entering the campaign to become general secretary of the union.

Mr. William L. Brown, chairman of the board of directors of the American Ship Building Co., has gone to Pasadena, Cal., for three months.

Capt. J. J. H. Brown of Buffalo has returned from Europe.

The Erie is rapidly adding a large number of locomotives and freight cars to its large equipment, it being the intention of the management to supply the line with heavier power and cars of larger capacity. One hundred consolidation engines, weighing 2,000,000 lb. each are being built and thirty-seven of the same type, but weighing 8,000 lb. less, will soon be delivered. The company will exhaustively experiment with the new and so far successful type of passenger engine known as the balanced compound. The Baldwin works are building two of the Vauclain pattern and the American Locomotive Co. has one, the Cole type, almost completed. They will each weigh in excess of 200,000 lb. The tests will be made on the New York division. Three Pacific style, which has three sets of drivers and two trailing wheels and weighing 230,000 lb., have also been ordered for passenger service. Thirty-five hundred steel underframe box cars of 80,000 lb. capacity are being built in addition to 1,000 50-ton flat bottom single hopper gondolas and 1,100 self-clearing 50-ton double hoppers.

The Board of Public Service of Cleveland awarded contract last week to the L. P. & J. A. Smith Co. of Cleveland, for dredging the Cuyahoga river between Columbus and Voltaire streets. The work will cost $7,600.

The battleship Minnesota building at the yard of the Newport News Ship Building & Dry Dock Co. will be launched on April 8.

Mr. E. R. Thomas of New York has placed an order with Smith & Mabley of New York for a motor boat to be 40 ft. long, to be equipped with an eight-cylinder simplex engine of 150 H. P. and to be built under a guarantee that it will attain 30 miles an hour. The boat is being designed by Tames, Lemoine & Crane of New York, and is to be entered in the race in England for the Harmsworth cup.

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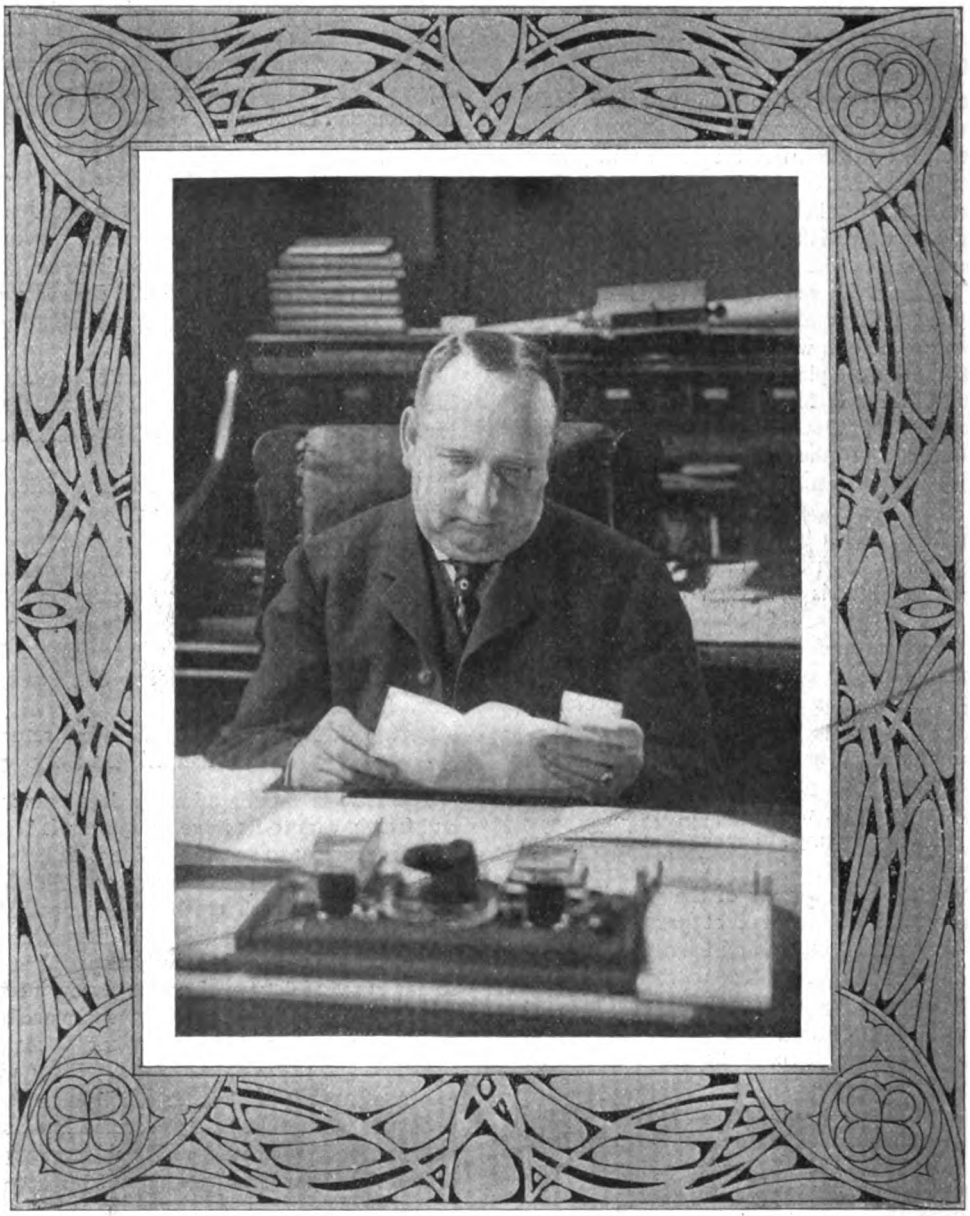
Launch of the James C. Wallace

Auspicious indeed was the launch of the steamer James C. Wallace, the second largest vessel on the great lakes, at the Lorain yard of the American Ship Building Co. on Thursday last. The thousands of persons who saw the steamer take the water never witnessed a better launch. For everyone concerned, including the spectators, the precise moment of a launch is always one of intense excitement but the Wallace went down the ways on an even keel and both bow and stern took the plunge together. The launching weight of this vessel was about 500 tons in excess of that of the Augustus B. Wolvin, for she went overboard practically complete with engines and boilers aboard and spars up. She will be complete in every sense of the word by April 1 and her first cargo will undoubtedly be that of coal from Lorain to the head of the lakes. This great vessel was named after the president of the American Ship Building Co. and was christened by his daughter, Miss Lydia Wallace. The customary bottle of champagne was most effectively broken as the steamer started down the ways. The launching stand was decorated in white and blue and Miss Wallace was accompanied by Miss Mary Abbott, Miss Elizabeth McNairy, Miss Estelle Boggis, Miss Elizabeth McCrea, Miss C. Calhoun, Miss Edith Randerson, Miss Harriet Lawrence, Miss Avis O'Brien, Miss Helen Meldrum, Miss Constance Mather, Miss Irma Zimmerman, Miss Ruth Jones, Miss Helen North and Miss Leolyn Everett, her class mates at the Hathaway-Brown school. Others on the stand were Mr. and Mrs. Robert Wallace, Sr., Mr. and Mrs. James C. Wallace, Mr. and Mrs. C. H. Wellman, Mr. and Mrs. W. M. Mills, Capt. Edward Morton and Miss Morton, Mr. and Mrs. Robert Logan and Miss Hilda Logan, Mr. R. C. Wetmore, Senator Wm. Gibson of Hamilton, Ont., Mr. and Mrs. John A. Donaldson, Mr. and Mrs. W. H. McGean, Capt. and Mrs. C. L. Hutchinson, Mr. John F. Wedow and Mr. Henry Steinbrenner.



MR. JAMES C. WALLACE, PRESIDENT OF THE AMERICAN SHIP BUILDING CO.
(Taken at his desk.)

After the launch the party repaired in the special cars that had taken them to Lorain to the Clifton Park Club where luncheon was served. The tables were beautifully decorated with cut flowers and notwithstanding the large number of invited guests everyone was quickly and abundantly served. Mr. Harvey D. Goulder acted as toastmaster. No choice could have been better because he was at all times easy, humorous and resourceful. Mr. Goulder announced that he was about to introduce a man full of energy, strength and hopefulness and who in addition inspired the reverence that goes with age (at this moment terrific applause was heard from the adjoining room into which Mr. Goulder's voice could not possibly penetrate). "They evidently know the man I am going to mention" replied Mr. Goulder quickly. "I take great pleasure in introducing Mr. Robert Wallace."

Mr. Wallace was given a rousing reception and expressed his thanks in a very simple manner for it. He also took oc-

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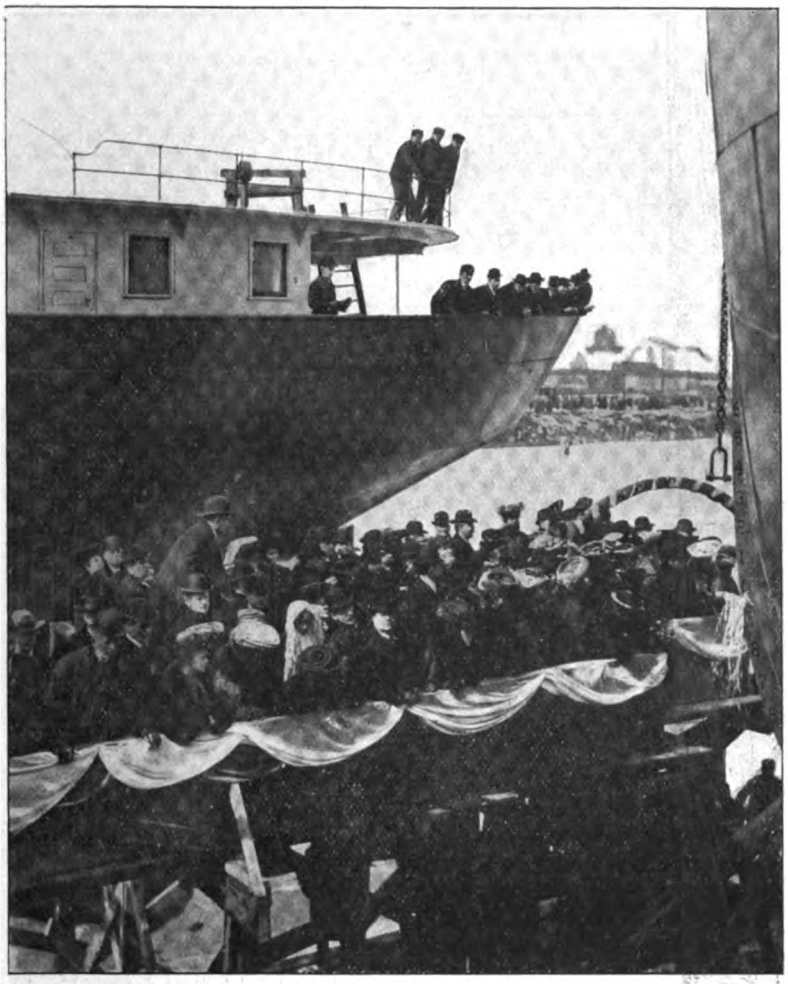
casion to thank the citizens of Lorain for the hospitality which they had shown to the ship building company, saying that when the ship yard was founded Lorain did what was right by it and that the ship yard would in return see that it did right by Lorain.

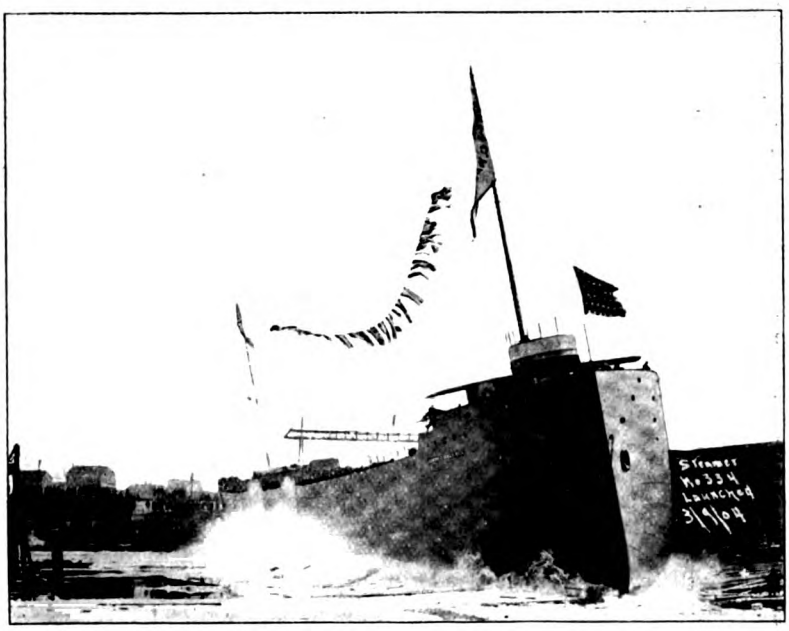
"'Show me a man who is diligent in his business and he shall stand before kings,'" said Mr. Goulder quoting Shakespeare. "We are all kings here who are not queens and I want to present to you one of the kings." He then introduced Mr. James C. Wallace who thanked everyone for being present and said that the hope was sincerely in him that the James C. Wallace would meet with good weather, good luck and good wind, which he confessed was more than he had wished any other boat that he had built. It was natural, he said, that he should hope that the other boats would speedily go on the rocks because there is more money in repairing ships than in building them. He also took occasion to thank the Chamber of Commerce of Lorain for their sentiments of good feeling and good will and added that the ship yard was going to make a city out of Lorain.



MISS LYDIA WALLACE BREAKING THE BOTTLE JUST AS THE STEAMER STARTED DOWN THE WAYS.

Mr. C. H. Wellman, who was then introduced, expressed great admiration for Mr. Wallace, saying that even as late as twelve years ago the great engineers of the country would have declared it impossible to build so large a vessel as the James C. Wallace and to launch her with the ease with which she was launched. He added that Mr. Wallace had achieved a greater reputation as a naval architect than he himself was even conscious of. He thought, moreover, that the James C. Wallace was no more worthy of success than the man for whom she was named.

Capt. George P. McKay spoke briefly on early days on the lakes.



JUST AS SHE STRUCK THE WATER.

A hearty speech was made by Senator Wm. Gibson of Hamilton, Ont, which was received with much applause. He said that Canada was making great strides which is not surprising seeing that it was situated alongside of the most progressive people on the face of the earth. Mr. Gibson stated that he had learned ship building in his early days on the Clyde but thought that the lakes were in the vanguard of progress and doubted if any vessel could have been built anywhere in the world in double the time that it had taken to build the James C. Wallace. He referred to the energy displayed by Canada in improving and developing her waterways and in standing for everything that was progressive. He said that as far as he and his party who had come over to visit the launch were concerned that they had but one regret—that there should have come over a lady, rather up in years now who had been able to do up the best of America's financial—Senator Gibson got no further than that, for his covert reference to Mrs. Chadwick elicited great storms of applause. He said he did not know how the men regarded Mrs. Chadwick but that she certainly was the idol of the women, for the last thing that his daughter said to him as he left home was "I hope you'll have a good time, papa, but whatever you do be sure to see Mrs. Chadwick and give her my love."

Mr. F. W. Hart was called upon for a speech but got out of it very nicely by proposing a toast to Miss Lydia Wallace, the sponsor of the vessel.

Unquestionably the best extempore speech, however, was made by Mr. Homer H. McKeehan of the firm of Hoyt, Dustin & Kelley. As an extempore effort those who were present doubtless never heard a bet-

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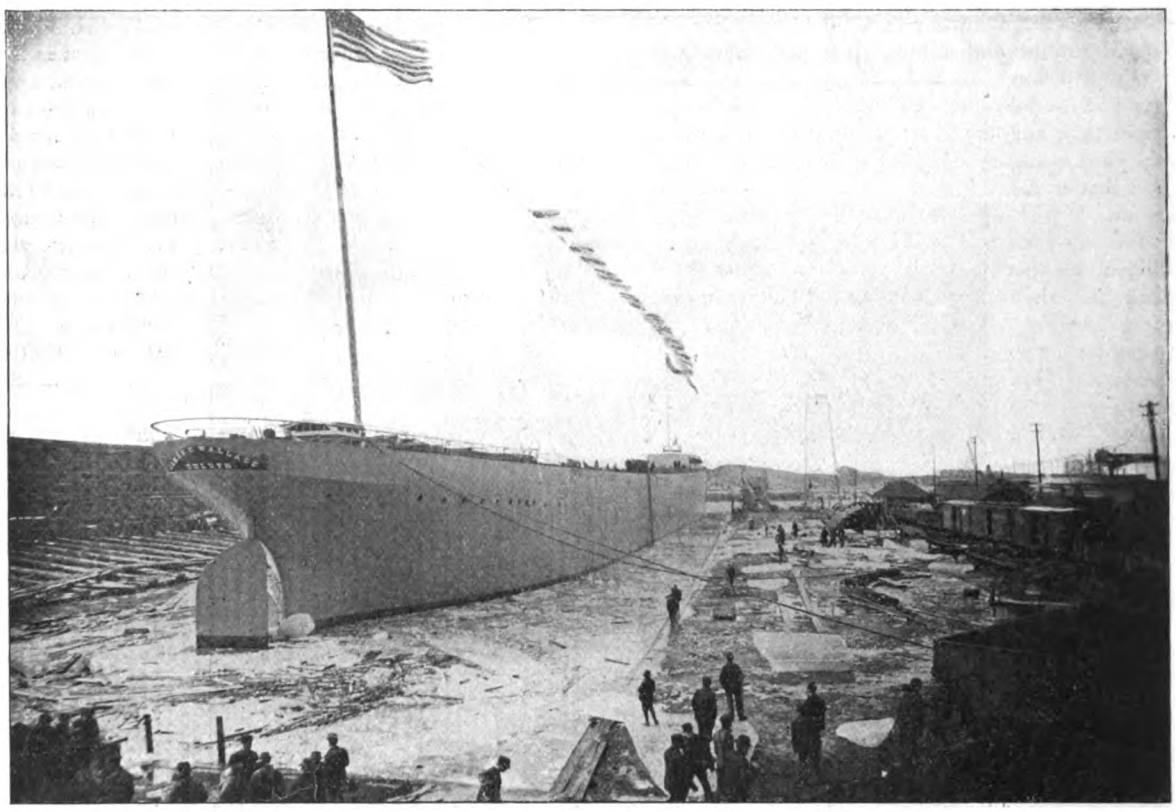

THE JAMES C. WALLACE IMMEDIATELY AFTER THE LAUNCH.

ter. It was one of those happy, quick, sparkling things, full of point and humor, depending on the moment for effect and too elusive altogether to be resolved into cold type. Like the player's art it was the gift to those present and cannot be transmitted.

In closing Mr. Goulder proposed a toast to the source of Jim Wallace's success—his life at home. Nothing would satisfy those present than that Mrs. Wallace should stand on her chair while all drunk her health standing.

DESCRIPTION OF THE STEAMER.

While the Wallace is 8 ft. shorter than the steamer Augustus B. Wolvin, the largest vessel on the lakes, the cubical capacity of her cargo hold is actually greater because it is 4 ft. wider at the top and 5 ft. wider at the bottom while only being 1 ft. less in length. The Wallace has thirty-two hatches as against thirty-three in the Wolvin. In all other respects the steamers are structurally duplicates. The Wallace is 552 ft. over all, 532 ft. keel, 56 ft. beam and 31 ft. deep. The hopper extends in one continuous length of 408 ft. without bulkheads or divisions of any kind, and in width it measures at the top 47 ft., and at the bottom 29 ft. The space between the sides of the ship and the sides of the hopper is used for water ballast, so that the water ballast, as well as being in the usual double bottom underneath the hopper, extends up the sides to the height of the main deck stringer. This construction was adopted to accommodate the use of automatic clam shells in unloading the cargo and while it serves this purpose, it also serves to make a stronger vessel. Another feature of the construction is the fact of the ordinary hold stanchions being dispensed with, and in their place a system of girder arches is substituted to support the upper deck as well as the sides of the vessel. There are thirty-two cargo hatchways on the spar deck, each one measuring 33 ft. by 9 ft. in the clear, and spaced 13 ft. apart centers, so that it will be possible for the clam shells to unload the vessel entirely without any hand shoveling. These hatchways are fitted with a patented system of steel plate sliding hatch covers known as the Brousseau device, operated by steam engines and shafting, so that no manual labor is required for the opening and closing of the hatch covers. The spar deck is continuous and flush from stem to stern, and the only erections on it are the pilot house and texas forward, and the coamings around the engine and boiler openings and dining room skylight aft. The water ballast space is divided into numerous compartments by watertight athwartship bulkheads fitted at intervals of about 60 ft., and the total ballast capacity is about 8,000 tons of water. On the spar deck are six 8 by 10 in. single drum engines, carrying each a steel wire mooring line for the usual mooring and warping purposes. In fact, steam has been used wherever possible to displace manual labor. There is a steam windlass fitted for handling the two 8,000-lb. anchors, and a steam capstan on the spar deck aft. She will be fully equipped with electric lights throughout and has duplicate plants so that there will always be one to fall back on in case of the other giving out. In the forward end of the vessel, immediately under the pilot house and texas, there are five staterooms for owners and their families, also accommodations for their private gallery, dining room and social parlor; also, two toilet rooms. They are entirely set apart from the crew's quarters and will be luxuriously furnished and fitted out. The ship's officers are accommodated on the deck immediately below the owner's quarters, and the engine room officers are quartered alongside of the engine at the after end of the vessel, where is also located the kitchen, dining room and mess room for the crew.

The propelling machinery, as is usual in lake vessels, is located in the extreme after end of the boat. The main engine is of the quadruple four-crank type, with cylinders 18½ in., 28½ in., 43½ in. and 66 in. diameter, each having 42 in. stroke of pistons, and they are designed for an indicated horse power of 2,000 when making 80 revolutions per minute. The cylinders are arranged from forward in the following order: High-pressure, first-intermediate, second-intermediate and low-pressure. The high pressure is fitted with a liner secured in the usual way. The valves of the high, first and second intermediate are of the piston type, placed in front of their respective cylinders, and driven by "Joy" radial valve gear.

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The low-pressure cylinder is fitted with a double-ported slide valve on the after end, operated by double bar Stephenson link motion. The bedplate is of the girder type, of box section, in two pieces, bolted together, and has five main bearings lined with white metal. There are four back and five front columns, the former acting as guides for the crossheads. The piston rods are of steel 5⅜ in. diameter and the connecting rods of hammered iron 9 ft. long between centers, with wedge adjustment at top and "T" ends with bolts at bottom. The cross-heads are of cast steel, keyed to piston rods and fitted with steel crosshead pins, secured with double taper and nut. The slippers are of bronze of large surface and easily adjustable. The crank shaft which, with its four cranks is built

THE JAMES C. WALLACE AND THE CAPITOL AT WASHINGTON, REPRODUCED IN EXACT PROPORTION, SHOWING HOW THE GREAT STEAMER WOULD LOOK IF PLACED ON TOP OF THE CAPITOL. THE CAPITOL IS 755 FT. LONG; THE WALLACE, 552 FT.

without couplings, is 12½ in. diameter. The crank pins are each 12½ in. diameter by 13½ in. long. The thrust is of the "horseshoe" type with six go-ahead collars and five backing. The engine is fitted with a direct-acting steam, and a hand, worm reversing gear, also a steam turning gear at aft end of thrust shaft. The propeller is four-bladed cast steel, of sectional type 14 ft. 6 in. diameter and 14 ft. 6 in pitch. The outboard bearing is 13 in. diameter by 4 ft. 8 in. long, filled with lignum vitae.

The boilers, two in number, are of the Babcock & Wilcox type, and placed with a 12-ft. space between them to fire athwartship. The working pressure is 250 lbs. per square inch, and the steam is superheated, the superheater being placed on top of boilers proper. The boilers are fitted with the mechanical stokers built by the Duluth Stoker Co., the coal being fed into the hoppers, passing from thence on to traveling grates, the ashes being deposited at the back of boilers and discharged overboard by means of steam-driven elevators. The boilers are fitted with a system of induced draft, having two 7 ft. 6 in. diameter fans driven by double 6 by 5 in. high-speed engines. To purify and heat the feed water before reaching the boilers, two Learmonth purifiers are fitted, also a large heater into which all the auxiliaries exhaust. There are the following auxiliaries in the engine room, the pumps, all being of the Blake type: One vertical cross compound simplex air pump; two horizontal cross compound simplex ballast pumps; one horizontal compound duplex feed pump; one horizontal duplex pony pump; one horizontal duplex bilge pump; one horizontal duplex cooler pump; two general electric generating sets of 15 K. W. for electric lighting; one Globe steam steerer and one Sturtevant fan with attached engine for ventilating purposes.

The coal bunker is fitted in front of the boiler room and has capacity for about 350 tons of coal. In every respect the vessel has been fitted out and built to meet the most modern requirements of lake service. Capt. Frank Rae, who brought out the Wolvin last year, will command the Wallace.

GUESTS AT LAUNCH AND LUNCHEON.

The list of invited guests was as follows:

Cleveland: H. D. Goulder, Wm. Gerlach, Andrew Squire, W. B. Sanders, J. H. Dempsey, Charles T. Brooks, W. W. Smith, F. B. Smith, W. W. Watterson, A. F. Harvey, E. C. Collins, Roy Williams, James Corrigan, Price McKinney, John Corrigan, J. E. Ferris, D. R. Hanna, R. L. Ireland, M. A. Andrews, Max McMurray, John Ashley, Howard Hanna, Jr., S. M. Folsom, George Warner, F. C. Richards, L. M. Dunham, Silas Hitchcock, John Mitchell, A. Mitchell, John Wedow, Ralph Mitchell, John Mitchell, John Donaldson, Fred Saal, E. T. Bierce, Harry Donaldson, N. J. Boylan, Roger M. Lee, Charles O. Jenkins, J. C. Gilchrist, John Gilchrist, Joseph A. Gilchrist, F. R. Gilchrist, A. J. Gilchrist, E. Morton, A. W. Thompson, C. L. Hutchinson, W. H. McGean, F. D. Herriman, H. N. Herr, Frank Billings, John T. Frawley, W. C.

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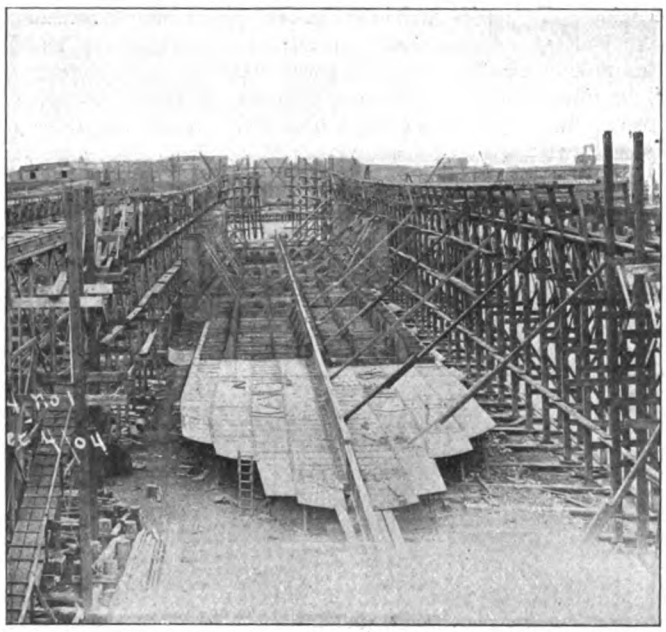
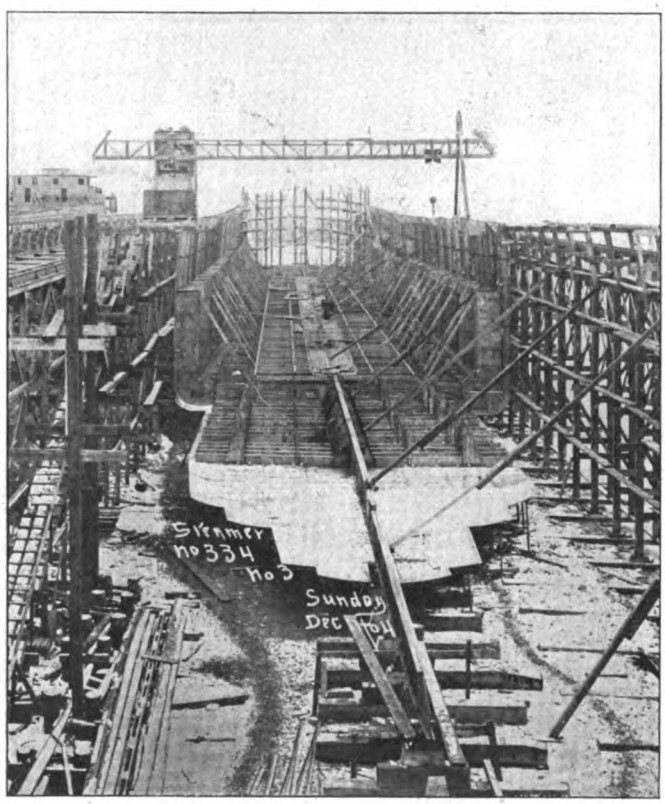


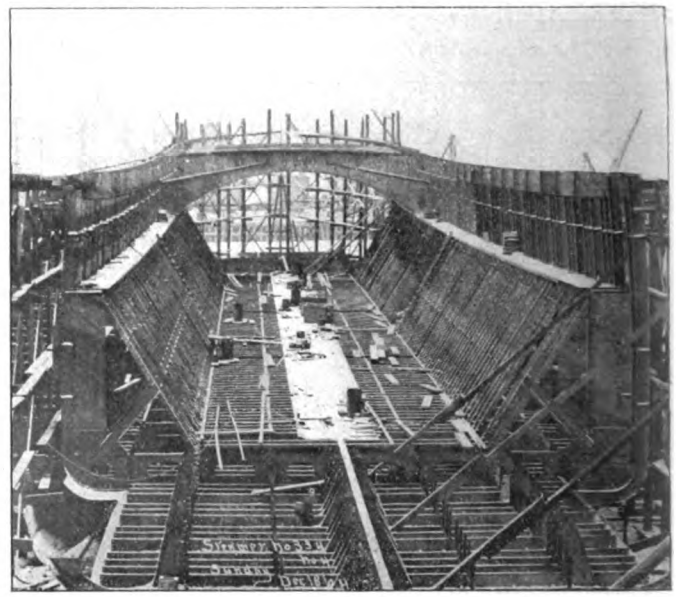
THE JAMES C. WALLACE ON DEC. 4.

Richardson, W. E. Chapman, Clarence Rich, H. H. Hawgood, W. A. Hawgood, A. H. Hawgood, C. P. Gilchrist, C. E. Benham, F. M. Osborne, H. S. Robbins, J. H. Hoyt, H. A. Kelley, G. A. Vondensteinen, A. C. Dustin, H. Andrews, H. H. McKeehan, M. H. Wardwell, W. H. Hill, W. P. Palmer, Robert



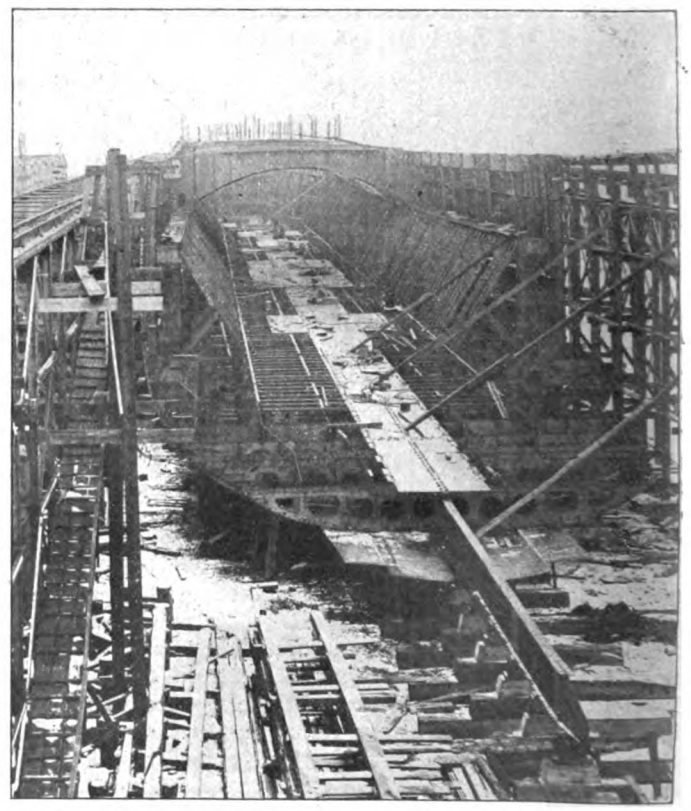
THE JAMES C. WALLACE ON DEC. 11.

Nye, A. S. Chisholm, Wm. Chisholm, H. T. Pratt, A. C. Saunders, E. P. Williams, H. B. Nye, Samuel Mather, H. G. Dalton, A. P. Murray, Wm. McLaughlin, H. S. Hazelton, E. P. Williams, J. M. Pickands, H. S. Pickands, C. C. Canfield, W. H. Becker, Wm. G. Bollach, G. A. Garrettson, G. S. Russell, D. Z. Morton, Calvary Morris, J. H. McBride, J. H. Wade; C. C. Bolton, Francis Widlar, F. B. Squires, L. B. Miller, H. S. Stebbins, Charles F. Leach, Charles L. Murfey, L. A. Murfey, J. H. Colwell, W. P. Johnson, E. R. Perkins, C. E. Gowen, W. A. Pardee, Lawrence Hitchcock, F. W. Hart, W. A. Hart, Hart & Co.; Luther Allen, Edward Allen, Joseph R. Kraus, C. E. Farnsworth, F. J. Woodworth, G. N. Sherwin, H. R. Sanborn, B. A. Bruce, R. R. Rhodes, W. C. Rhodes, M. A. Bradley, F. G. Tallman; H. H. Brown, Charles T. Pratt, W. B. Davock, Fayette Brown, J. H. Dexter, C. H. Wellman, T. R. Morgan, J. B. Coffinberry, H. J. Davies, H. E. Willard, A. L. Johnson, W. S. Bailey, W. H. Bosworth, E. L. Hessen-



THE JAMES C. WALLACE ON DEC. 18.

mueller, E W. Bourne, L. A. Ranney, C. L. F. Wriber, F. S. Tarbell, C. J. Snow, Dr. H. W. Rogers, David McLean, E. H. Chickering, E. L. Fisher, J. G. Jennings, R. E. Burdick, F. C. Case, J. A. Lamson, A. Narten, John H. Bartow, Henry Stein-



THE JAMES C. WALLACE ON DEC. 25.

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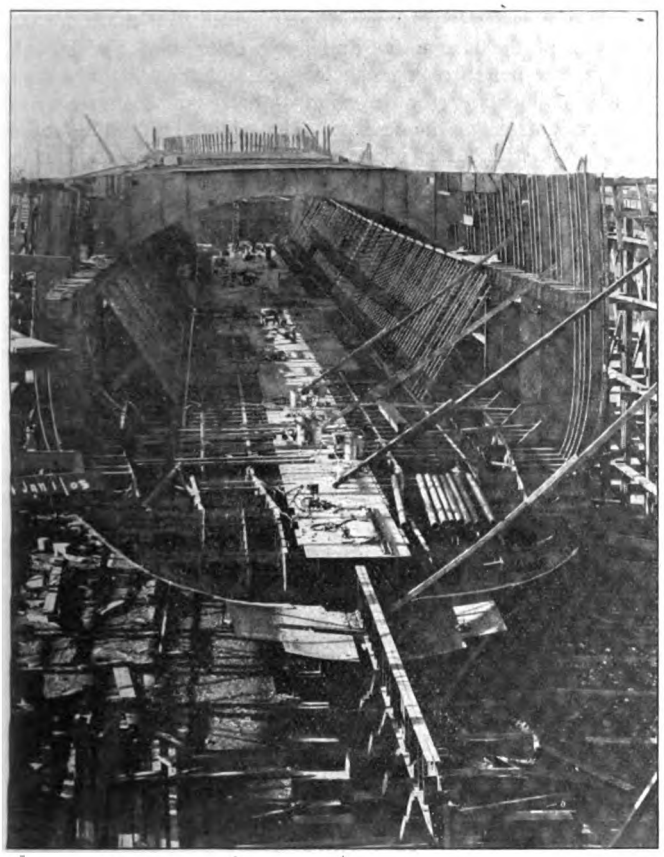
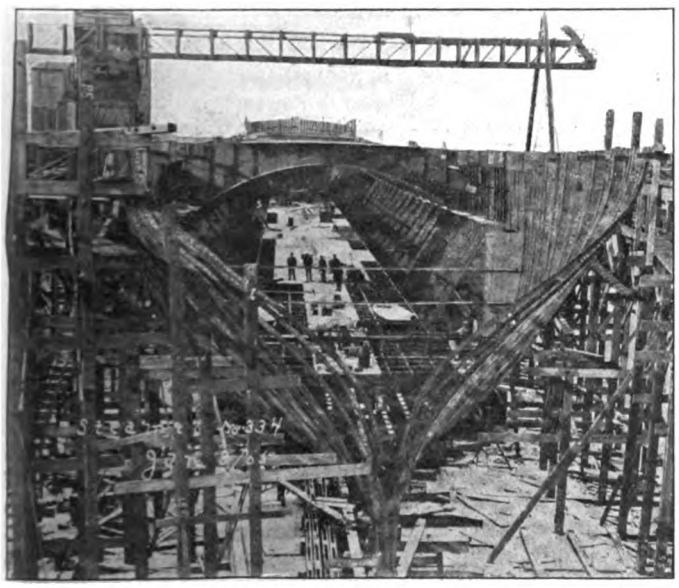


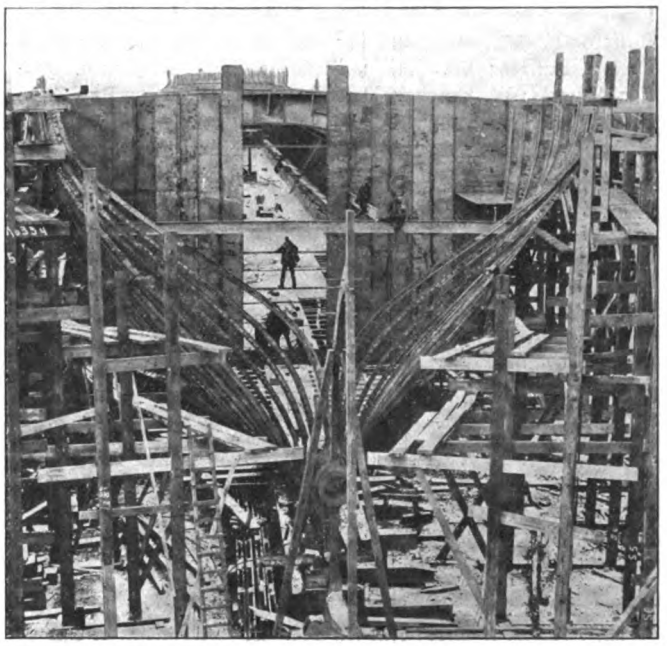
THE JAMES C. WALLACE ON JAN. 1.

brenner, G. A. Steinbrenner, C. E. Adams, H. A. Bishop, W. F. Carr, F. W. Gehring, S. F. Haserot, H. R. Hatch, Kaufman Hays, F. F. Hickox, E. V. Hale, H. D. Coffinberry, L. A. Cobb, H. C. Ellison, R. A. Harman, G.W. Kinney, M. A. Marks, Nelson Moses, Benjamin Rose, S. L. Severance, H. A. Sherwin, John Sherwin, W. T. White, J. M. Leicht, H. E. Hackenberg, J. C. Trask, Miss C. E. Canfield, E. W. Collins, J. E. Morrison, A. H. Bailey, F. H. Glidden, James Walsh, George



THE JAMES C. WALLACE ON JAN. 8.

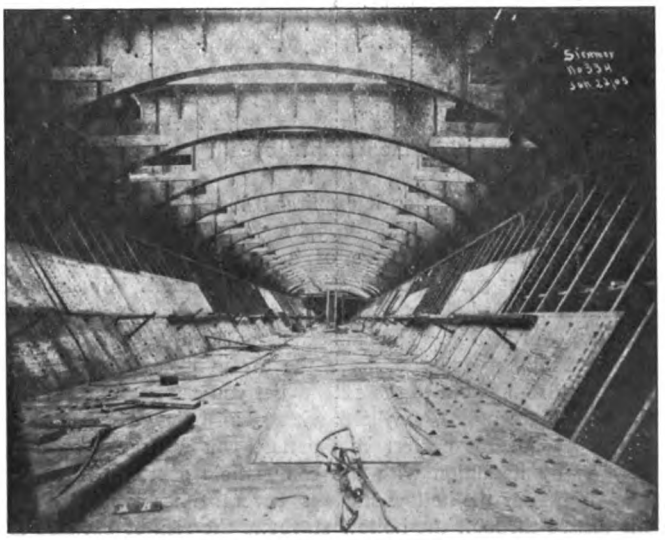
Arnold, Charles LaMarche, Hugh Buckley, James Kenealy, W. D. Reese, W. B. Castle, Burton C. Ayers, E. P. Lenihan, J. E. Upson, T. F. Newman, J. S. Weeks, Frank Seither, W. S. Keller, C. E. Grover, C. L. Gibson, Fred Borton, Eugene Graselli, Capt. Jas. Stone, J. B. Cowle, Capt. L. M. Coe, Theodore Kundtz, L. A. McCreary, W. F. Herman, E. D. Shurmer, C. A. Post, J. F. Corlett, C. A. Otis, Jr., A. H. Hough, W. D.



THE JAMES C. WALLACE ON JAN. 15.

B. Alexander, S. P. Fenn, B. F. Bourne, S. H. Elliott, A. H. Gilmore, T. E. Young, Capt. George Mallory, Mr. and Mrs. J. C. Pettee, W. C. Baker, Dr. N. M. Jones, Charles E. F. Lang, E. D. Latimer, C. L. Strong, F. Zimmerman, Miss Mary Abbott, Miss Elizabeth McNairy, Miss Estelle Boggis, Miss Elizabeth McCrea, Miss C. Calhoun, Miss Edith Randerson, Miss Harriet Lawrence, Miss Avis O'Brien, Miss Helen Meldrum, Miss Constance Mather, Miss Irma Zimmerman, Miss Ruth Jones, Leolyn Everett, Philip J. Minch, W. G. Beck, Capt. Geo. P. McKay, Charles Rauch, E. R. Darrow, Henry Kiefer, G. P. Faeber, F. H. Townsend, Frank A. Arter, George A. Marr, N. C. Mulcahy, E. M. Richardson, A. A. Coddingham, E. W. Williams, F. W. Jackson, Helen North, C. B. Stowe, F. M. McCartney, L. A. Reed, Charles E. Myers, P. J. McMyler, L. B. Hall, Wm. Greif, and W. D. Benes.

Out of town guests: W. M. Mills, Tonawanda; C. H. Weston, Tonawanda; W. A. Rogers, Buffalo; J. M. Wyman, Conneaut, O.; R. R. Richardson, Conneaut, O.; C. L. Thomp-



THE JAMES C WALLACE ON JAN. 22—INTERIOR VIEW.

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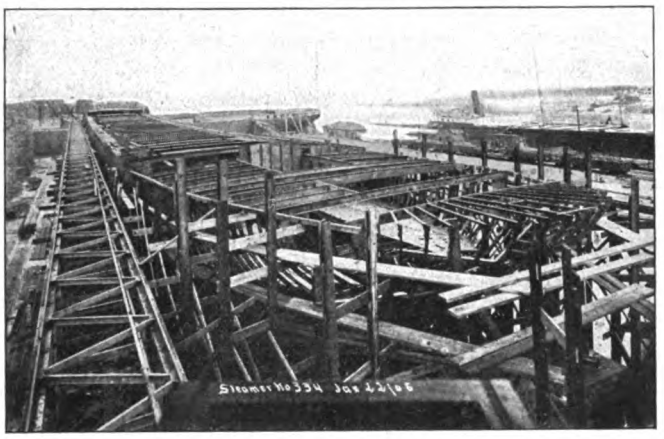
son, Erie, Pa.; F. Fleming, Erie, Pa.; John Reis, Newcastle, Pa.; J. R. McGinley, Pittsburg; Fred Nicholas, Unionville, O.; G. D. Nicholas, Elyria, O.; H. N. Branley, Erie; J. Baker, Erie; Henry Beckman, Erie; S. S. Walker, Chicago; Simon Levix, St. Louis; P. J. Flickinger, Conneaut; W. D. Sandrock, Buffalo; F. G. Meyers, Buffalo; John Weisbeck, Buffalo; F. E. Kellog, Buffalo; Ed. Gaskin, Buffalo; G. W. Maytham, Buffalo; Charles W. Kotcher, Detroit; O. W. Blodgett, Bay City; F. B. Case, Norwalk, O.; W. S. Brainard, Toledo; M. M. Drake, Buffalo; C. A. Eddy, Bay City; Henry Wineman, Jr.,



THE JAMES C. WALLACE ON JAN. 22—EXTERIOR VIEW.

Detroit; F. W. Gilchrist, Alpena, Mich.; J. J. Boland, Buffalo; Wm. Donaldson, Buffalo; F. S. Vance, Milwaukee; John Green, Buffalo; J. C. Maclay, Buffalo; M. J. Cummings, Oswego; N. Y.; E. J. Crosby, Milwaukee; M. H. Taylor, Erie; Peter Reiss, Sheboygan, Wis.; F. B. Chesbrough, Emerson, Mich.; W. J. Rardon, Chicago; James McBrier, Erie; Edward Mehl, Erie; P. P. Miller, Buffalo; George Hall, Ogdensburg, N. Y.; H. S. Wilkinson, Syracuse, N. Y.; L. C. Smith, Syracuse, N. Y.; E. D. Carter, Erie, Pa.; James Davidson, Bay City, Mich.; James E. Davidson, Bay City, Mich.; Eli Gunnell, Manitowoc, Wis.; W. E. Chilson, Buffalo; Joseph Kidd, Duluth.

AIR OPENINGS UNDER LOCOMOTIVE GRATES

There has been considerable discussion on this question recently and especially before the Northwestern Railway Club, where it was stated that the damper openings in recently built locomotives have been gradually reduced, and the space for damper openings is scarce on some of the latest locomotives; while on the little old engines of the past it was ample. As there is a direct loss of heat when the air supply is not adequate, sometimes reaching 25 per cent, it shows that this ash-pan subject is one that should not be forgotten in designing a new locomotive, or improving one which is in service, and it is safe to say that a large saving in fuel can be accomplished by increasing the damper openings in our recently built locomotives.

For perfect combustion it requires 8 lb. of oxygen for every pound of hydrogen and 2⅔ lb. of oxygen for every pound of carbon. With the dampers of a modern locomotive contracted, how is perfect combustion to be attained? By staying the firebox with hollow stays with an inside diameter of ⅛ in. and not over 3-16 in. You cannot get sufficient air through the grates and you dare not have the air in excessive volumes over the fire-bed, but to the extent that you can get air through 1,000 or more hollow staybolts with ⅛-in. holes, whether sufficient or not for perfect combustion, you will have enough oxygen by its union with the combustible gases in the firebox to pay for the hollow staybolts several times over. As the air passes through the hollow staybolts the risk of burning is decreased, expansion of the bolt is lessened and the cracking of the sheets from antagonism is made nil. Furthermore the exhaust of the locomotive drawing a current of air through the hollow bolts keeps the hole open and thereby presents a double opportunity for detection of breakage, both inside as well as outside of the firebox. The hollow bolt being rolled hollow its strength is increased and uniform and the bolt is flexible. Everything considered there is no doubt the hollow staybolt is the bolt wanted to overcome the troubles in the motive power departments of the railways.

SUMMARY OF NAVAL CONSTRUCTION

The monthly summary of naval construction shows the customary ratio of progress. The Connecticut is, however, shown as gaining on the Louisiana, having reduced the latter's percentage of lead from 6 to 2 per cent. Following is the summary:

		Degree of completion, per cent. Feb. 1,'05.	Mar. 1,'05.
BATTLESHIPS.			
Virginia	Newport News S.B.&D.D.Co.	76.96	80.82
Nebraska	Moran Brothers Co.	65.80	67.59
Georgia	Bath Iron Works.	73.61	75.09
New Jersey	Fore River Shipbuilding Co.	75.70	77.9
Rhode Island	Fore River Shipbuilding Co.	80.70	82.5
Connecticut	Navy Yard, New York.	64.51	67.17
Louisiana	Newport News S.B.&D.D.Co.	67.80	69.54
Vermont	Fore River Shipbuilding Co.	35.40	38.8
Kansas	New York Shipbuilding Co.	41.30	43.5
Minnesota	Newport News S.B.&D.D.Co.	55.70	58.69
Mississippi	Wm. Cramp & Sons.	20.60	22.55
Idaho	Wm. Cramp & Sons.	18.09	19.98
New Hampshire	New York Shipbuilding Co.	.....	.....
ARMORED CRUISERS.			
Pennsylvania	Wm. Cramp & Sons.	99.25	100.
West Virginia	Newport News S.B.&D.D.Co.	99.25	99.75
California	Union Iron Works.	70.00	72.2
Maryland	Newport News S.B.&D.D.Co.	96.50	97.50
South Dakota	Union Iron Works.	67.90	69.5
Tennessee	Wm. Cramp & Sons.	63.13	65.14
Washington	New York Shipbuilding Co.	62.70	66.4
North Carolina	Newport News S.B.&D.D.Co.	.....	.53
Montana	Newport News S.B.&D.D.Co.	.....	.55
PROTECTED CRUISERS.			
Chattanooga	Lewis Nixon.	99.13	99.13
Galveston	Wm. R. Trigg Co.	97.00	98.
St. Louis	Neafie & Levy S. & E. B. Co.	56.70	58.8
Milwaukee	Union Iron Works.	66.70	68.0
Charleston	Newport News S.B.&D.D.Co.	90.22	92.02
GUNBOATS.			
Dubuque	Gas Engine & Power Co.	85.70	88.2
Paducah	Gas Engine & Power Co.	76.20	78.6
TRAINING SHIPS.			
Cumberland	Navy Yard, Boston.	91.00	94.
Intrepid	Navy Yard, Mare Island.	78.00	86.
TRAINING BRIG.			
Boxer	Navy Yard, Portsmouth.	97.00	98.
TORPEDO BOATS.			
Stringham	Harlan & Hollingsworth Co.	99.	99.
Goldsborough	Wolff & Zwicker	99.	99.
Nicholson	Lewis Nixen.	99.	99.
O'Brien	Lewis Nixen.	99.	99.

Cobb, Butler & Co., Rockland, Me., will launch the four-masted schooner Governor Powers during the latter part of March. The Powers is 237 ft. long, 44 ft. 3 in. beam and 20 ft. 8 in. deep. Her engines and auxiliary machinery are supplied jointly by the Bath Iron Works, Bath, and the Hyde Windlass Co. The following had charge of the various departments of her building: Foreman of construction, David Wardwell; master joiner, E. J. Southard; master fastener, F. E. Cottrell; spar work, A. P. Wardwell; blacksmith work, L. A. Chase; rigging, R. Dunn, Thomaston, Me.; painting, Arthur Gray; caulking, H. P. Buchanan.

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CHANGES IN STEAMBOAT REGULATIONS

The Marine Review of Jan. 19 had an account of the meeting held in Washington to consider the new rules proposed for steam vessels. These regulations had been prescribed by the board of supervising inspectors but were inoperative until approved by the secretary of commerce and labor. Secretary Metcalf held a hearing of those interested in ship construction and navigation with the object of subsequently presenting the criticisms obtained to the board of supervising inspectors which met in annual session the same week at Washington. The arguments were accordingly submitted and the revised regulations have just been approved by the secretary under date of Feb. 25.

It was asserted at the public hearing that the rule requiring an iron or steel plate intended for the construction of marine boilers to be stamped in at least five places was an unnecessary hardship for the manufacturer. Some plates are so small that it would be impracticable to stamp them in the manner prescribed. Col. E. D. Meier, president of the Heine Safety Boiler Co., and also representing the American Boiler Manufacturers' association, was of this opinion and intimated that the rule was probably intended as a guarantee that after the plate had been used in boiler manufacture at least one impression of the stamp would show plainly. He thought that not more than two stampings would be necessary to ensure this result. The suggestion went unheeded, however, and the latest revision retains the five stamp requirement calling for the name of the manufacturer, the place where manufactured and the number of pounds tensile stress it will stand to the square inch.

The requirement of a record of the report in duplicate of the tested plate and the transmission of the duplicate to the boiler maker, thence to the purchaser and local inspector is rendered slightly more elastic by allowing the purchaser to hand in either the duplicate report or a certified copy of the one in possession of the boiler manufacturer.

A significant change has been made in one of the regulations relative to inspection. Material approved in one district should in all fairness pass muster in another. Hard and fast rules of universal application are eminently desirable and it should not be possible for the capricious or prejudiced to work at cross purposes to the manufacturer. When the material has been inspected at the mills by an assistant inspector, that officer's report and the boiler maker's affidavit "shall" be accepted for the data required. So says the final revision but in the orginal draft "may" was the word. The stronger word will count heavily for uniformity.

The stipulation made in the first place that every iron and steel plate, "except doubling plates, washers, manhole frames, clip plate braces, crown bars, gusset stays and other similar plate braces," for the construction of boilers shall be tested according to certain prescribed rules has been broadly amended by striking out the limiting clause here shown in quotation marks.

The argument for a lower tensile strength evidently made an impression though it was not wholly successful. The rule asserting that "for steel plates the sample must show, when tested, a tensile strength not lower than 50,000 pounds and not more than 75,000 pounds per square inch of sections," has now this important addition: "But on boilers whose construction is commenced after June 30, 1905, where the plate will come in contact with fire, either in use or in course of construction of the boiler, the tensile strength shall not be more than 70,000 pounds per square inch of section." This is a concession not only favored by practical boiler makers of the stamp of Capt. James Rees of Pittsburg and Col. Meier of New York, but is also quite in accord with the trend of modern theorists in steel research.

An emphatic objection was made by one speaker at the public hearing to any discrimination being made between the acid and the basic processes of steel manufacture. This did not avail, however, and section 8 of rule 1 still demands that "No plate made by the acid process shall contain more than .06 per cent of phosphorus and .04 per cent of sulphur, and no plate made by the basic process shall contain more than .04 per cent of phosphorus and .04 per cent of sulphur."

Section 11 of rule 1 reads: "Boilers of foreign vessels admitted to American registry after June 30, 1905, shall be deemed, if of iron, to have a tensile strength of 45,000 pounds to the sectional square inch; and, if of steel, to have a tensile strength of 50,000 pounds to the square inch," etc. These figures have been reduced 5,000 pounds respectively from the preliminary estimates of December, 1904.

At the hearing, Mr. Fletcher of the W. & A. Fletcher Co of Hoboken, N. J., showed the inadequacy of the government standards for riveting. Single and double riveting received attention, but triple riveting, as frequently employed in the manufacture of the large Scotch boilers now turned out, failed of consideration. It is understood that the board of supervising inspectors has had the complete formula governing this under consideration and it is hoped to enact it into law. Probably it will be submitted to the boiler manufacturers of the country for criticism before the final steps are taken. The stipulations of the present rules and regulations make no mention of triple riveting and the requirements of the department thereon. Unless by inference it may be supposed to lurk in the paragraph in the appendix which says: "Any riveted joint will be allowed when it is constructed so as to give an equal percentage of strength to that obtained by the use of the formula given." The formula in question is for single and double riveting and follows the practice of Thomas W. Traill as presented in his work on Boilers, Marine and Land, Their Construction and Strength.

H. Coulby, president and general manager of the Pittsburg Steamship Co., and Harvey D. Goulder of Cleveland, counsel for the Lake Carriers' association, took an active part in the public hearing and some of their suggestions bore fruit as indicated by the rules now adopted. Among other points already briefly mentioned, they opposed the compulsory installation of a donkey boiler on every freight carrying steamer, a ludicrous requirement in view of the almost entirely steel construction of the modern freighter. The donkey boiler for fire fighting purposes was manifestly needless on such a vessel. The latest revision shows the effect of the arguments made and the installation of an auxiliary boiler for fire pumps is now restricted to sea-going vessels.

Among the other objectionable items specified by the representatives of the lake interests were the requirements pertaining to bulkheads on all boats carrying passengers, the bulkheads not to be at greater intervals than one-fifth the length of the ship, etc. A lake freighter under these conditions would look like an egg crate and the construction would be a serious impediment in rapidly handling the cargo. The difficulty would be emphasized in the case of modern ore handling methods and equipment. Mr. Coulby made the point that the stringent regulations governing passenger steamers should not apply to the lake freighter which carries no passengers but has provision for caring for a few guests of the owner. This view seemed reasonable enough and it is not surprising that the accepted form now stands with the following sweeping qualification: "Every sea-going steamer and every steamer navigating the great northern and northwestern lakes carrying passengers for hire shall not have less than three watertight bulkheads," the words "for hire" exempting the freighter and as will be seen there is in any case a material reduction in the stipulated number of bulkheads.

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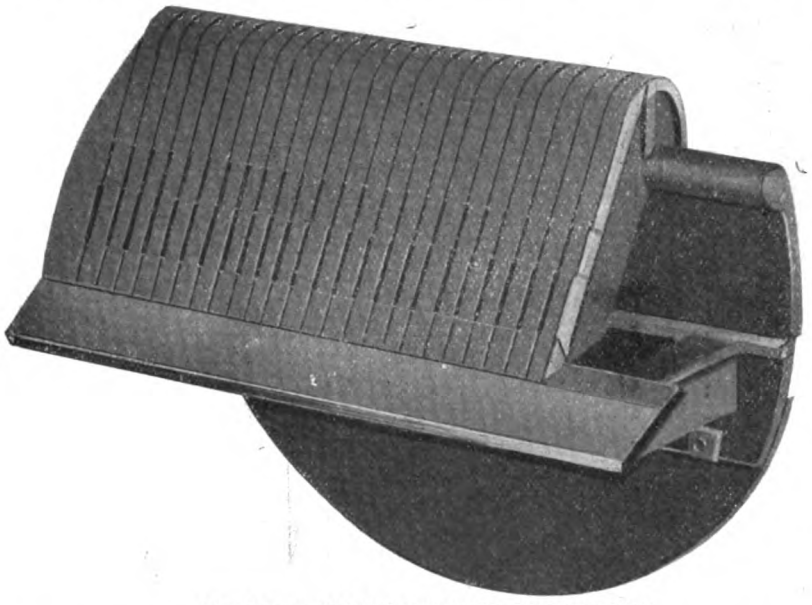
PATENT FURNACE BRIDGE WALL

The Sturrock patent furnace bridge wall is an appliance



STURROCK PATENT FURNACE BRIDGE WALL.

which has but recently been introduced in the United States, and yet, in this short time it has met with great favor amongst the vessel owners of the great lakes, who have the reputation of being the most progressive set of men in the business anywhere and always alive to the advantages to be realized in the operation of their property by adopting all the latest improvements, which give promise of any gain in economy and efficiency.

The Sturrock patent furnace bridge wall is one of these improvements, the obvious advantages of which caused its instant adoption on its introduction, and which has, after extended use in all types of boilers and under all conditions of forced and natural draft, substantiated all of the claims made for it by the inventor. The Sturrock bridge wall is placed in the furnace very much in the same way as the ordinary brick wall but is composed of cast iron bars in place of brick and fire-clay. The bars are so arranged that air from the ash pits is admitted freely all around them, and becoming heated in its passage between the bars escapes through openings at the top of the bridge wall, mingling with the gases escaping from the fuel in the furnace, and so effecting their perfect combustion and largely reducing the formation of smoke. The effect of this circulation of air is such that the bars are kept cool and will not warp, twist or burn out, and no clinker ever adheres to them. All engineers are familiar with the trouble caused by clinkers adhering to brick bridge walls, which cannot be removed without pulling away more or less of the brickwork, which thus requires to be rebuilt several times in a season. These troubles are all eliminated by the use of the Sturrock bridge wall. The bars are so secured that they cannot get out of place while in use, but when necessary to make examinations or repairs can all be easily removed and can again be replaced without requiring any repairs or renewals.

These bridge walls have now been in practically continuous use for over four years in ocean steamers without requiring any renewals whatever. They have been in use in several lake steamers all of the season of 1904, and have given such general satisfaction that many more are now being fitted with them, and as the vessel owners of the lakes became better acquainted with the advantages to be gained by their use, the demand for them is bound to increase.

Mr. Alexander Hynd of the firm of Nacey & Hynd, 209 Western Reserve building, Cleveland, is the agent for the Sturrock bridge wall on the great lakes from whom all particulars can be obtained.

TOM JONES KNOWS WHAT'S WHAT

Editor Marine Review.—I enclose a slip cut from the Washington Post, Feb. 27, '05. It just fits page 29 of the last issue of the Marine Review. Tom Jones seems to understand the subject. In my opinion it is the most important question before the country.

A. KIRBY,
405 Seward square.

Washington, D. C., March 12.

The communication referred to was as follows:

Editor Post: I notice in your free-trade editorial on American shipping that you lay great stress on the cost of material in the building of a ship. That is a mistake. Labor is the great cost. Mechanics in this country get from two to three times as much pay as they do in foreign countries. After a ship is built we cannot run them in competition with foreign ships, because the running expenses are so great, as the result of high wages. Take, for instance, the firemen on the British lines out of New York. The best pay is £3 10s., about $17.50, per month. An American wants two or three times that much, and the same from the highest to the lowest man on board. The country was built up by subsidizing the railroads in the west; in fact, all the great works are built by subsidy. The river and harbor bill is where the member gets in his work for the improvement of a creek so a flat boat can float.

The members of the house fell over each other to vote on the railroad rate bill, but turned a deaf ear to the merchant marine bill. It seems to be anything to beat the American flag on the ocean. Where is our patriotism? The American flag has vanished from the ocean. Congress has no time to attend to such matters, still harping on free ships. Bring in your material free, build the ships, and attempt to run them in competition with cheap foreign labor, and the ships will soon be laid up. Uuless there is a small subsidy or subvention, or whatever you may call it, to make up the difference in running expenses, I see no hope of running American ships in competition with foreign ships. THOMAS JONES.

TRADE NOTES

The merchant engineering business heretofore conducted under the firm of William T. Bonner & Co., Boston, has been incorporated and will hereafter be operated under a Massachusetts charter granted to the William T. Bonner Co. The scope of the business will be extended to cover a much larger line of steam plant accessories than has heretofore been attempted, and much attention will be given to the manufacture of standardized specialties for high pressure and superheated steam. A full line of cushion pressure seated control cocks, blow-off and other valves of a new type, designed by William T. Bonner, will be manufactured in all sizes up to 4 in.

The Wilford waterproof cloth which is handled in the United States by Edward A. Bunker, P. O. Box 1,579, New York, has latterly interested vessel owners on the great lakes as hatch covering. It is made of the twisted thread of pure flax and is very strong, light and durable. It will not crack like cotton cloth and has none of the objections incidental to cloth treated with paraffine or paint. It has been used for some time on the fleet of vessels belonging to the Cleveland Cliffs Iron Co. and the company is delighted with it. It is twice as light and twice as strong as cotton and is absolutely water repellent.

The A. S. Cameron Steam Pump Works, foot of East Twenty-Third street, New York, recently delivered over a score of pumps of different sizes and types to the Union Iron Works, San Francisco, Cal.

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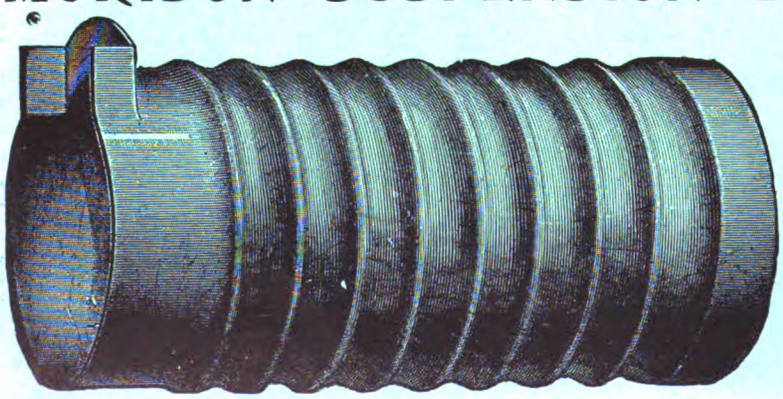

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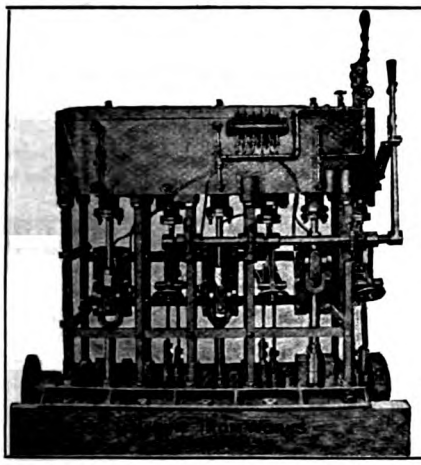

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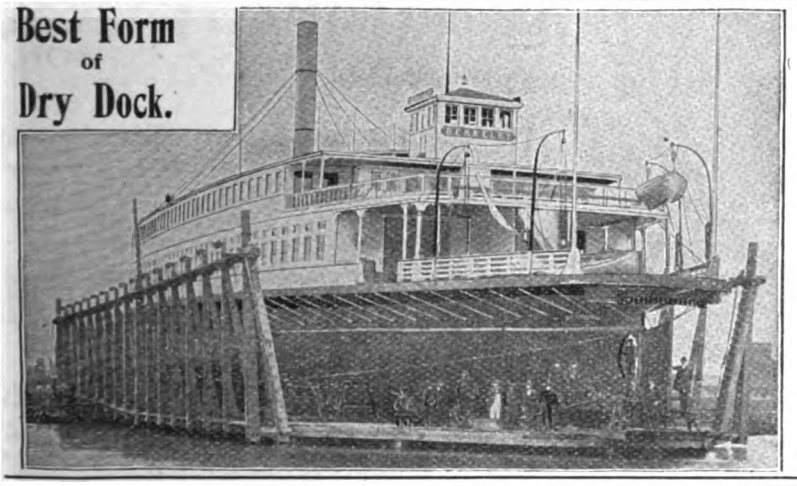

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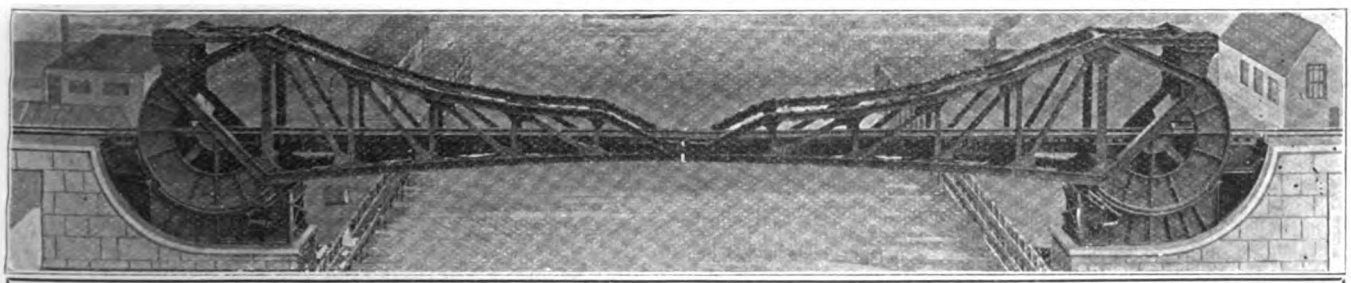

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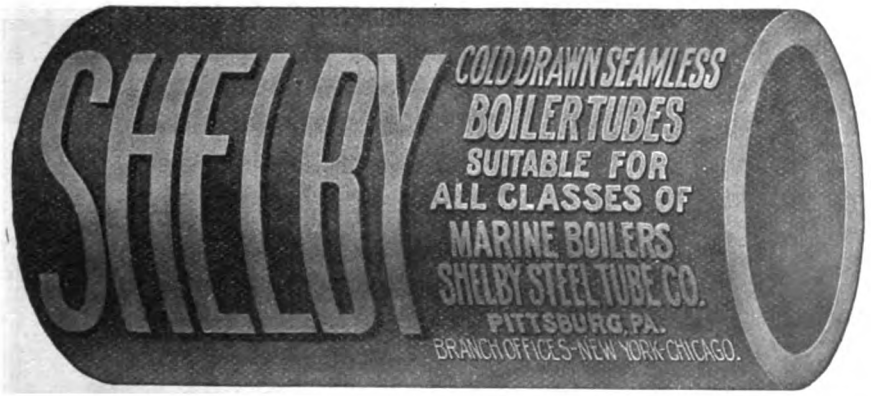

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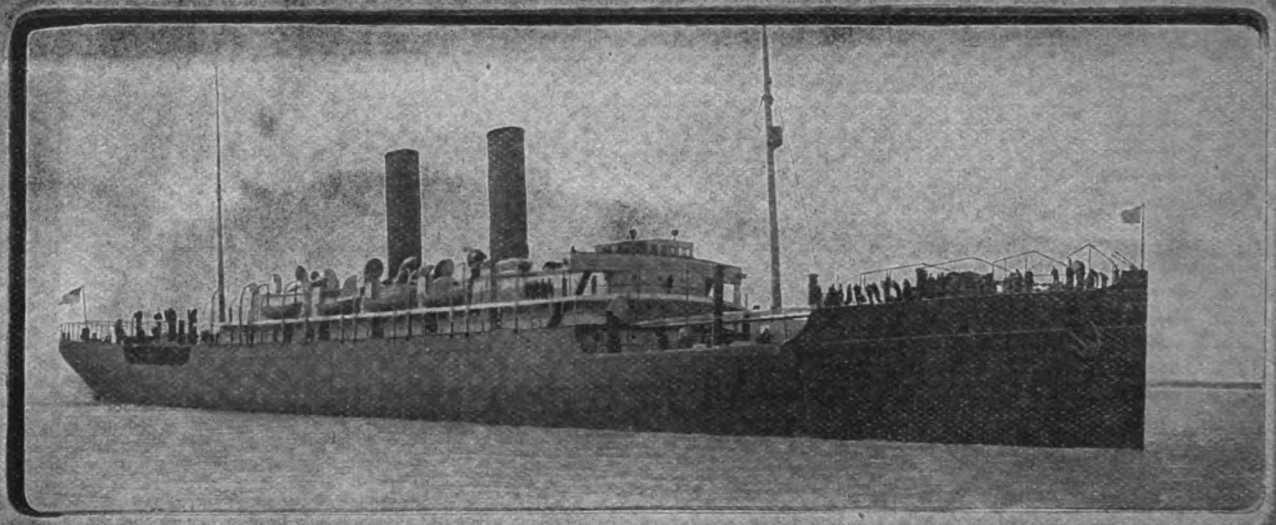

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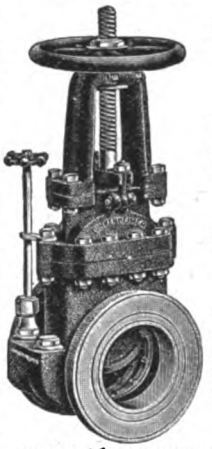

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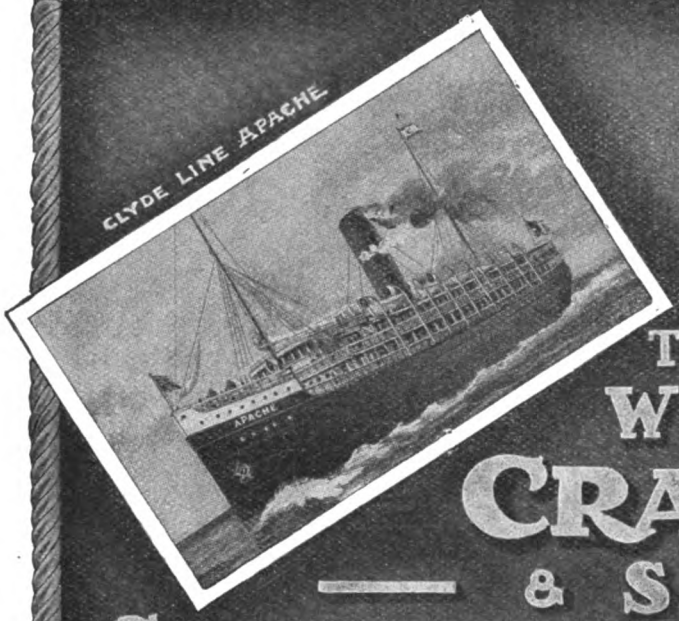

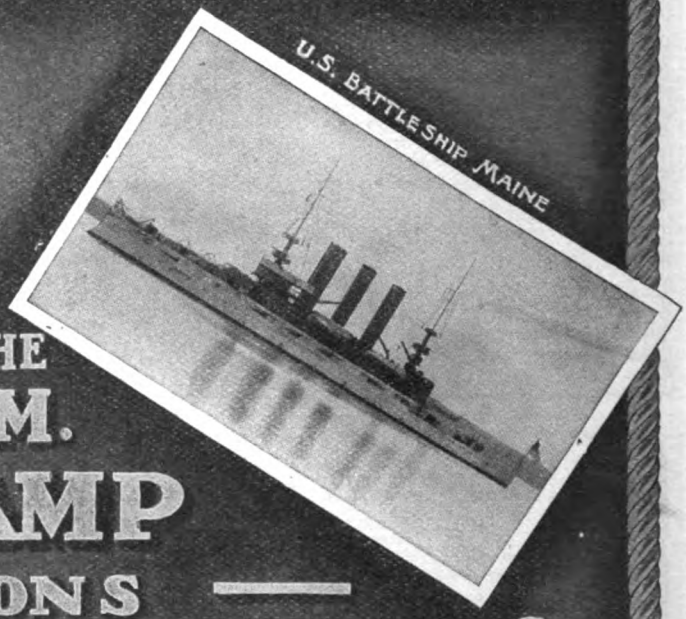

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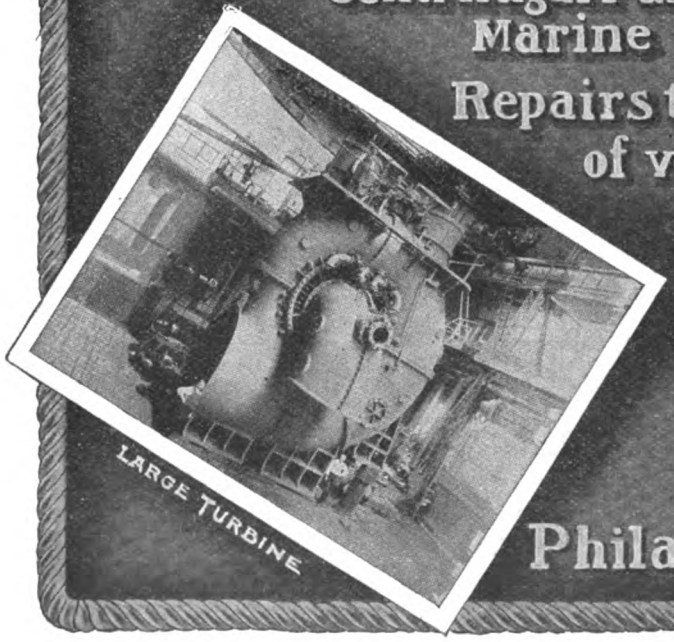

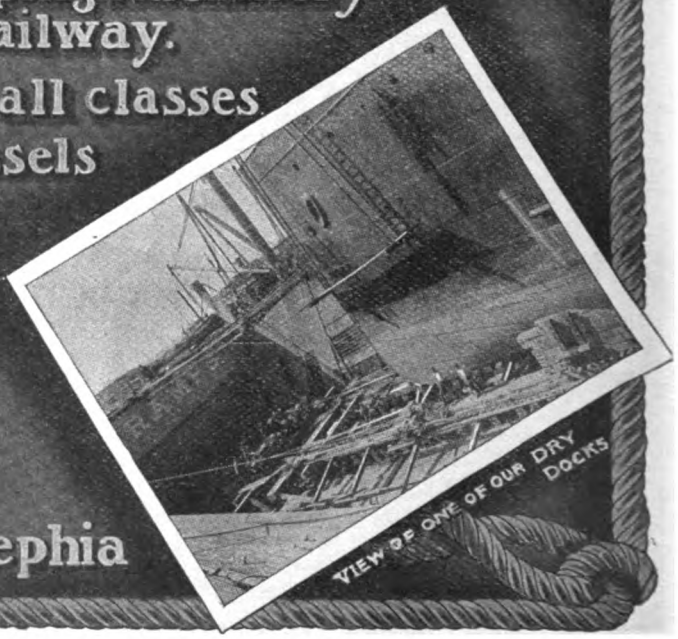

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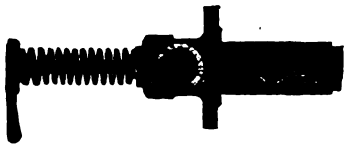

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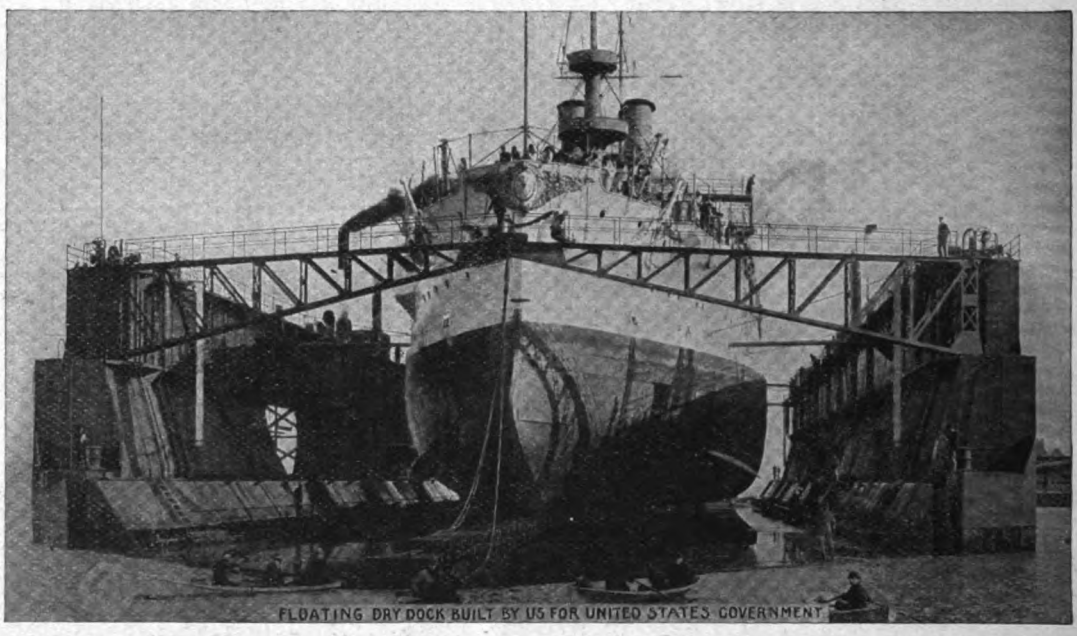

FLOATING DRY DOCK BUILT BY US FOR UNITED STATES GOVERNMENT

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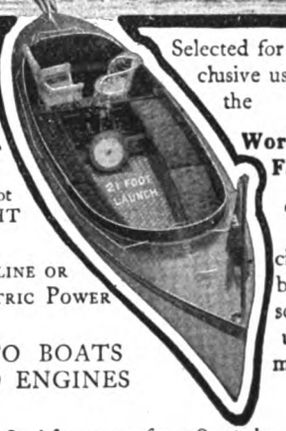
The Peerless TRUSCOTT



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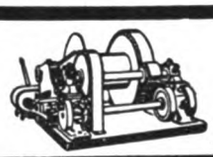

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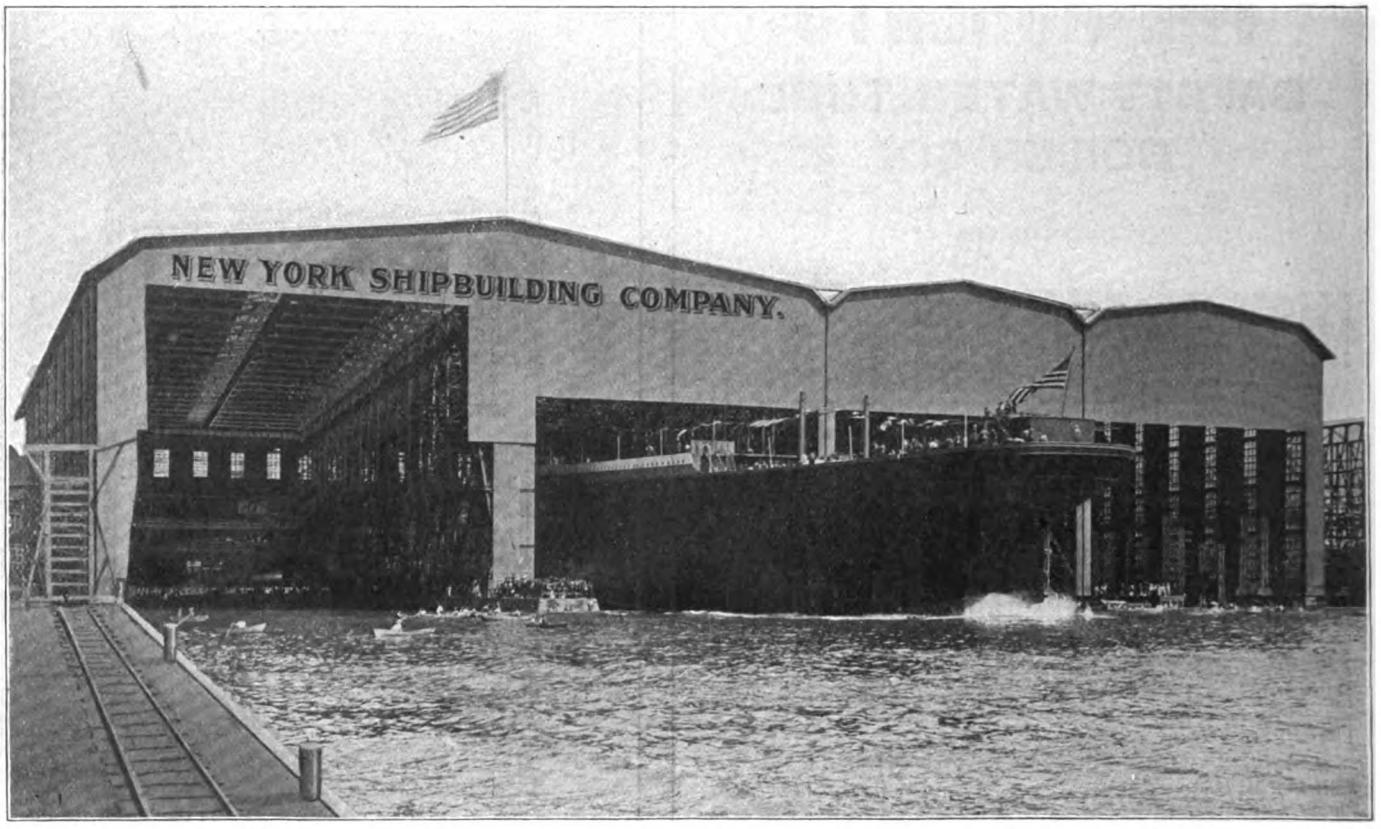

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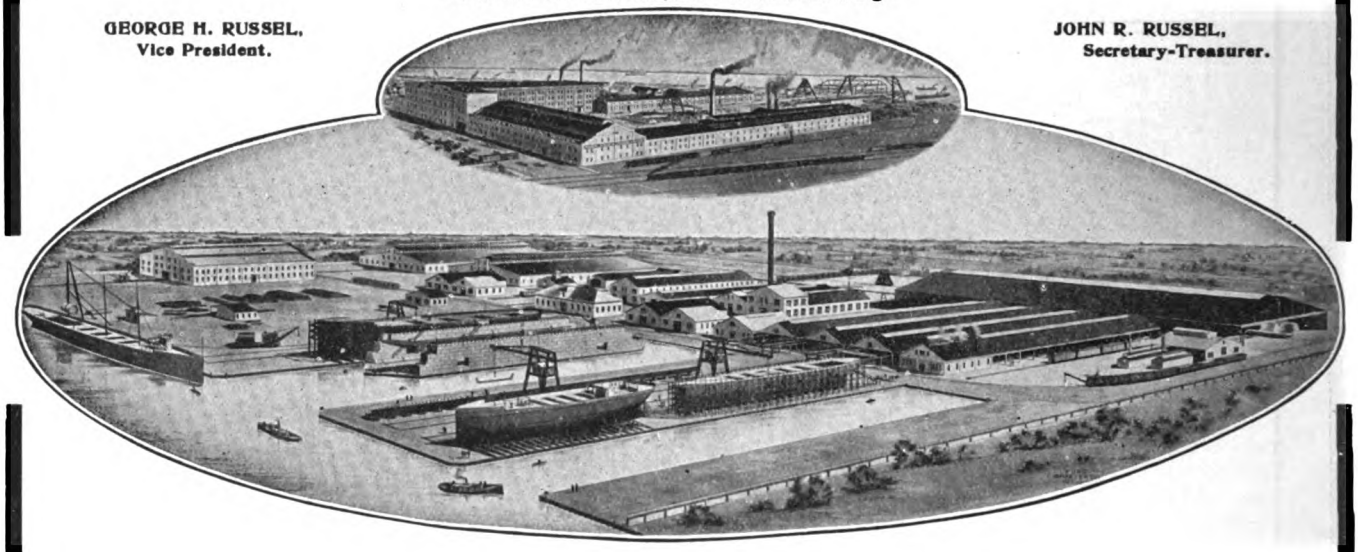

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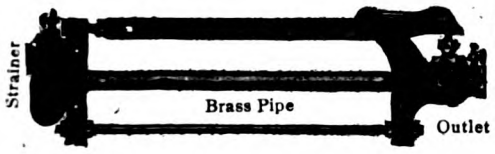

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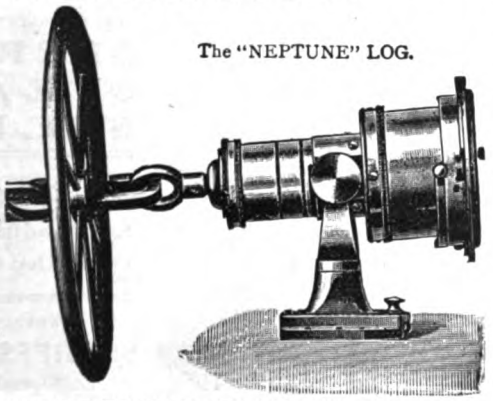

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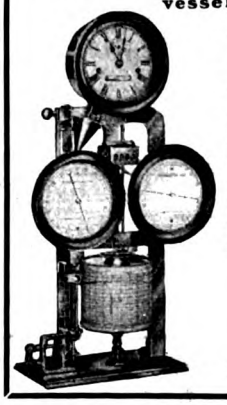

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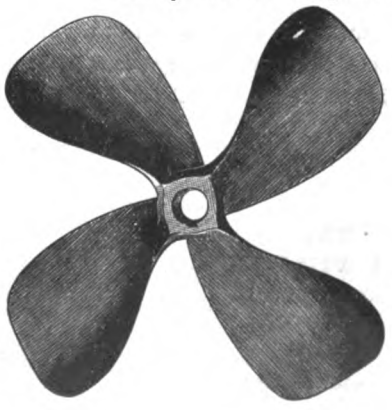

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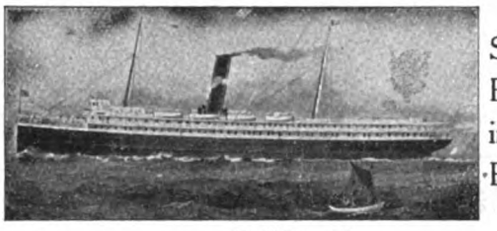

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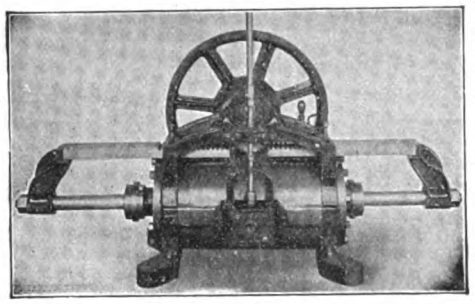

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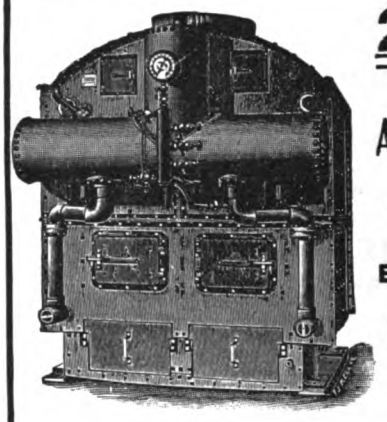

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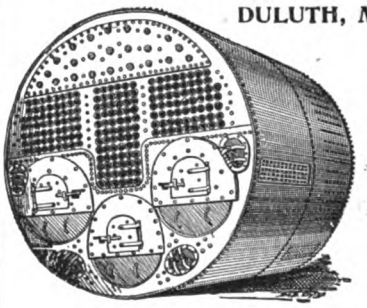

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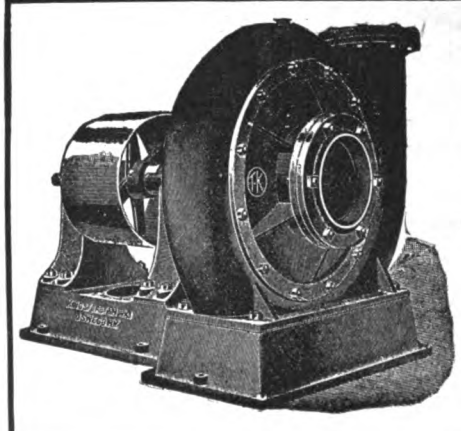

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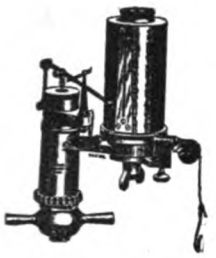

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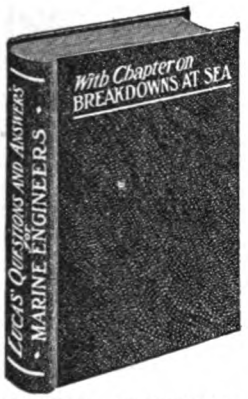

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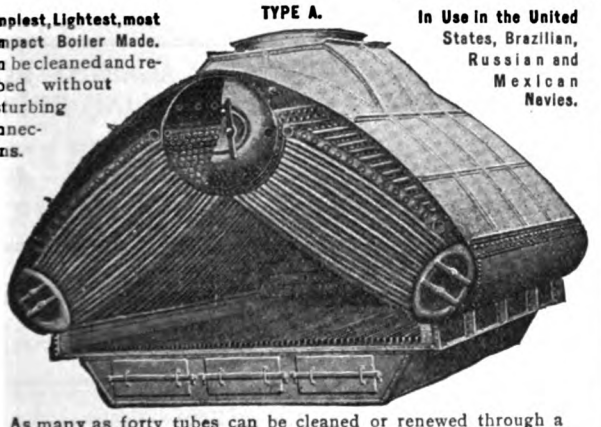

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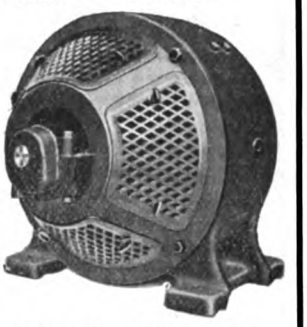

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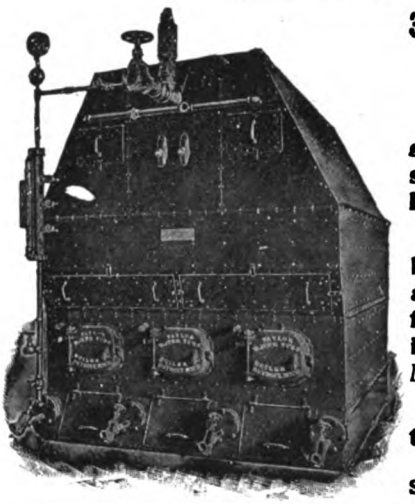

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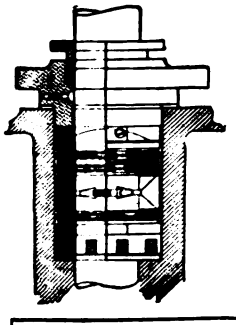

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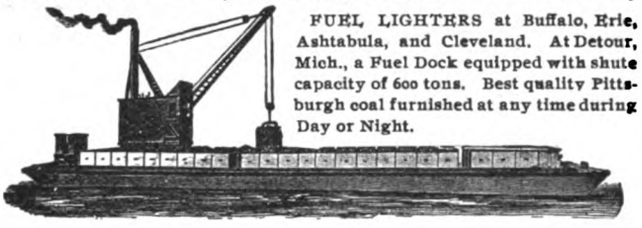

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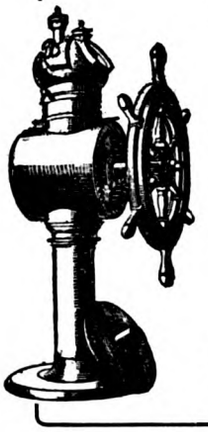

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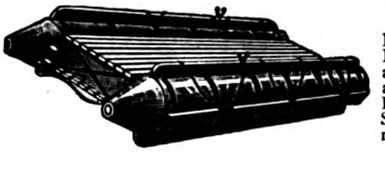

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AIR PORTS, DEAD LIGHTS, ETC.
Marine Mfg. & Supply Co.....New York.

AIR PUMPS AND APPLIANCES.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.

ANCHORS.
Bowers, L. M. & Co.....Binghamton, N. Y.
Seaboard Steel Casting Co.....Chester, Pa.

ANTI-FOULING AND ANTI-CORROSIVE COMPOSITION FOR STEEL VESSELS.
Holzapfel's American Composition Co..New York.

ANTI-FRICTION METALS.
Cramp, Wm. & Sons.....Philadelphia.

ARTIFICIAL DRAFT FOR BOILERS.
American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Sturtevant, B. F., Co.....Hyde Park, Mass.

ASH EJECTORS.
Great Lakes Engineering Works.....Detroit.

ATTORNEYS AND PROCTORS IN ADMIRALTY.
Gilchrist, Albert J.....Cleveland.
Goulder, Holding & Masten.....Cleveland.
Hoyt, Dustin & Kelley.....Cleveland.
Kremer, C. E.....Chicago.
MacDonald, Ray G.....Chicago.
Potter & Potter .....Buffalo.
Shaw, Warren, Cady & Oakes.....Detroit.
White, Johnson, McCaslin & Cannon Cleveland.

BAROMETERS, MARINE GLASSES, ETC.
Ritchie, E. S. & Sons.....Brookline, Mass.

BELTING, RUBBER.
New York Belting & Packing Co....New York.

BLOCKS, SHEAVES, ETC.
Boston & Lockport Block Co....Boston, Mass.
Cleveland Block Co.....Cleveland.

BLOWERS.
Power Specialty Co.....Detroit.
Sturtevant, B. F. Co. .....Hyde Park, Mass.

BOAT BUILDERS.
Drem, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, David.....New York.
Lane & DeGroot ....Long Island City, N. Y.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co....St. Joseph, Mich.
Willard, Chas. P. & Co. Winthrop Harbor, Ill.

BOILER CLEANING DEVICE.
Power Specialty Co.....Detroit.

BOILER COMPOUNDS.
Dearborn Drug & Chemical Works....Chicago.

BOILER MANUFACTURERS.
Almy Water Tube Boiler Co.Providence, R. I.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Babcock & Wilcox Co.....New York.
Bertram Engine Works Co., Ltd. .....
..... Toronto, Can.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
Dearing Water Tube Boiler Co.....Detroit.
Delauney, Belleville & Co..St. Denis, France.
Detroit Ship Building Co.....Detroit.
Fletcher, W. A. & Co.....Hoboken, N. J.
Fore River Shipbuilding Co.....Quincy, Mass
Georgian Bay Engineering Works.....
..... Midland, Ont.
Great Lakes Engineering Works.....Detroit.

BOILER MANUFACTURERS—Continued.
Kingsford Foundry & Machine Works....
.....Oswego, N. Y.
Marine Iron Works .....Chicago.
Maryland Steel Co..... Sparrows Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher Water Tube Boiler Co....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
New York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co....
..... Duluth, Minn.
Roberts Safety Water Tube Boiler Co....
..... New York.
Stirling, The Co.....Chicago.
Superior Ship Building Co....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.
Willard, Chas. P. & Co..Winthrop Harbor, Ill.

BOILER RIVETS.
Bourne-Fuller Co.....Cleveland.

BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.
Falls Hollow Staybolt Co..Cuyahoga Falls, O.

BOILER TUBES, MARINE.
Reading Iron Co.....Reading, Pa.

BRASS AND BRONZE CASTINGS.
Cramp, Wm. & Sons.....Philadelphia.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Lunkenheimer Co. .....Cincinnati.
Macbeth Iron Co.....Cleveland.
Victor Metals Co.....Braintree, Mass.

BRIDGES, BUILDERS OF.
Cowing, John P.....Cleveland.
Scherzer Rolling Lift Bridge Co....Chicago.

BROOMS.
Perfection Broom Co.....Indianapolis, Ind.

BUCKETS, ORE AND COAL.
Brown Hoisting & Conveying Machine Co.
..... Cleveland.
McMyler Mfg. Co.....Cleveland.

BULKHEAD DOORS, WATERTIGHT.
"Long Arm" System Co. .....Cleveland

CABIN AND CABINET FINISHING WOODS.
Martin-Barriss Co.....Cleveland.

CANVAS SPECIALTIES.
American Canvas & Tarpaulin Corp. ....Buffalo.
Baker & Co., H. H.....Buffalo.
Upson-Walton Co..... .....Cleveland.

CAPSTANS.
American Ship Windlass Co..Providence, R. I.
Hyde Windlass Co.....Bath, Me.
Marine Mfg. & Supply Co.....New York.

CEMENT, IRON FOR REPAIRING LEAKS.
Smooth-On Mfg. Co.....Jersey City, N. J.

CHAINS.
Woodhouse Chain Works.....Trenton, N. J.

CHAIN CONVEYORS, HOISTS.
Brown Hoisting Machinery Co. (Inc.)....
..... Cleveland.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

CHAIN HOISTS.
Boston & Lockport Block Co....Boston, Mass.

CHARTS.
Penton Publishing Co.....Cleveland.
Potter, J. D.....London.

CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.
Ashton Valve Co.....Boston.
Ritchie, E. S. & Sons.....Brookline, Mass.

COAL PRODUCERS AND SHIPPERS.
Hanna, M. A. & Co.....Cleveland.
Ironville Dock & Coal Co.....Toledo, O.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.

COAL AND ORE HANDLING MACHINERY.
Brown Hoisting Machinery Co. (Inc.) ..
..... Cleveland.
McMyler Mfg. Co..... Cleveland.

COMPASSES.
Ritchie, E. S. & Sons.....Brookline, Mass.

CONDENSORS.
Great Lakes Engineering Works.. Detroit.
Thropp & Sons Co., John E....Trenton, N. J.

CONTRACTORS SUPPLIES.
Contractors Supply & Equipment Co., Chicago.

CONTRACTORS FOR PUBLIC WORKS.
Breymann & Bros., G. H .....Toledo.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.
..... Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co.,
.....Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H..Milwaukee.
Sullivan, M. .....Detroit.

CORDAGE.
Baker & Co., H. H.....Buffalo.
Upson-Walton Co.....Cleveland.

CORK JACKETS AND RINGS.
Armstrong Cork Co.....Pittsburg, Pa.
Kahnweiler's Sons, D.....New York.

CRANES, TRAVELING.
Brown Hoisting Machinery Co.....Cleveland.
McMyler Mfg Co.....Cleveland.

DIVING APPARATUS.
Morse, A. J. & Son.....Boston.
Schrader's Son, A.....New York.

DREDGING CONTRACTORS.
Breymann & Bros., G. H. .....Toledo.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co..
..... Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co.,
.....Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H. .Milwaukee.
Sullivan, M. ....Detroit.

DRYING APPARATUS.
Sturtevant, B. F., Co.....Hyde Park, Mass.

DRY DOCKS.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....
.....Newport News, Va.
Shipowners Dry Dock Co.....Chicago.
Superior Ship Building Co....Superior, Wis.

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Buyers' Directory of the Marine Trade.—*Continued.*

ELECTRIC HOISTS AND CRANES.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

ELECTRIC LIGHT AND POWER PLANTS.
General Electric Co.....Schenectady, N. Y.
Mietz, Aug. .....New York.
Sturtevant, B. F. Co.....Hyde Park, Mass.
Thropp & Sons, John E.....Trenton, N. J.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

ENGINE BUILDERS, MARINE.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Bertram Engine Works Co., Ltd. .....
..... Toronto, Can.
Chicago Ship Building Co.....Chicago.
Chase Machine Co.....Cleveland.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Shipbuilding Co.....Quincy, Mass.
Great Lakes Engineering Works Detroit, Mich.
Hall Bros. .....Philadelphia.
Lockwood Mfg. Co.....East Boston, Mass.
Marine Iron Works ..... Chicago.
Maryland Steel Co.....Sparrows Point Md.
Mietz, Aug. .....New York.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher, Chas. D.....New York.
Moulton Steering Engine Co.....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
Nsw York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.
Roach's Ship Yard .....Chester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp, J. E. & Sons Co.....Trenton, N. J.
Trout, H. G.....Buffalo.
Willard, Chas. P. & Co..Winthrop Harbor, Ill.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.
Cory, Chas. & Son.....New York.
Marine Mfg. Supply Co.....New York.

ENGINE TESTING.
Kreer & Parsons.....Chicago.

ENGINEERING SPECIALTIES AND SUPPLIES.
Crane Co.....Chicago.
Kieley & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
New York Belting & Packing Co..New York.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.
Hynd, Alexander .....Cleveland.
Hunt, Robt. W. & Co.....Chicago.
Kidd, Joseph .....Duluth, Minn.
Kreer & Parsons.....Chicago.
Lovejoy, H. O.....Buffalo.
Matteson & Drake .....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Roelker, H. B.....New York.
Wood, W. J. .....Chicago.

FANS FOR VENTILATION, EXHAUST, ETC.
Sturtevant, B. F. Co.....Hyde Park, Mass.

FEED WATER PURIFIERS AND HEATERS.
Reilly Repair and Supply Co., Jas.....New York.
Ross Valve Co.....Troy, N. Y.

FIXTURES FOR LAMPS, OIL OR ELECTRIC.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

FORGES.
Sturtevant, B. F. Co.....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.
Cleveland City Forge & Iron Co....Cleveland.
Fore River Shipbuilding Co.....Quincy, Mass.
Macbeth Iron Co.....Cleveland.

FLUE WELDING.
Fix's, S. Sons .....Cleveland.

FUEL ECONOMIZERS.
Sturtevant Co., B. F.....Hyde Park, Mass.

FUELING COMPANIES AND COAL DEALERS.
Hanna, M. A. & Co.....Cleveland.
Ironville Dock & Coal Co.....Toledo, O.
Parker Bros. Co., Ltd.....Detroit.
Picklands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Smith, Stanley B., & Co.....Detroit,
Smith Coal & Dock Co., Stanley B.Toledo, O.

FURNACES FOR BOILERS.
Continental Iron Works.....New York.

GASKETS, RUBBER.
New York Belting & Packing Co..New York.

GAS BUOYS.
Safety Car Heating & Lighting Co..New York.

GAS AND GASOLINE ENGINES.
Chase Machine Co.....Cleveland.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Reliance Mfg. Co..... Providence, R. I.

GAUGES, STEAM AND VACUUM.
American Steam Gauge & Valve Mfg. Co.
..... Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co. .....Cincinnati.

GAUGES, WATER.
Bonner & Co., Wm. T.....Boston.
Lunkenheimer Co. .....Cincinnati, O.

GRAPHITE.
Dixon Crucible Co., Joseph..Jersey City, N. J.

HAMMERS, STEAM.
Chase Machine Co.....Cleveland.

HATCH COVERS.
American Canvas & Tarpaulin Corp ....Buffalo.

HEATING APPARATUS.
Sturtevant, B. F. Co.....Hyde Park, Mass.

HOISTS FOR CARGO, ETC.
American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co. (Inc.)....
..... Cleveland.
Chase Machine Co.....Cleveland.
General Electric Co.....New York.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Hyde Windlass Co.....Bath, Me.
McMyler Mfg. Co.....Cleveland.
Marine Iron Co.....Bay City.
Mietz, Aug. .....New York.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

HOLLOW STAYBOLT IRON.
Falls Hollow Staybolt Co...Cuyahoga Falls, O.

HOSE, RUBBER.
New York Belting & Packing Co..New York.

HYDRAULIC DREDGES.
Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.
Watson-Stillman Co., The.....New York.

ICE MACHINERY.
Great Lakes Engineering Works.....Detroit.
Roelker, H. B.....New York.

INDICATORS FOR STEAM ENGINES.
American Steam Gauge Co.....Boston.
Ashton Valve Co.....Boston.

INJECTORS.
American Injector Co.....Detroit.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Lunkenheimer Co. .....Cincinnati.
Penberthy Injector Co.....Detroit, Mich.

INSURANCE, MARINE.
Elphicke, C. W. & Co.....Chicago.
Fleming & Co., E. J.....Chicago.

INSURANCE, MARINE—Continued.
Gilchrist & Co., C. P.....Cleveland.
Hawgood & Co., W. A.....Cleveland.
Helm & Co., D. T.....Duluth.
Hutchinson & Co.....Cleveland.
McCarthy, T. R.....Montreal.
McCurdy, Geo. L.....Chicago.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Peck, Chas. E. & W. F..New York & Chicago.
Prindiville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.

IRON CASTINGS.
Reading Iron Co.....Reading. Pa.

IRON ORE AND PIG IRON.
Bourne-Fuller Co.....Cleveland. O.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.
Reading Iron Co.....Reading, Pa

LAMPS, INCANDESCENT.
Westinghouse Elec. & Mfg. Co.....Pittsburg, Pa.
Sawyer-Man Electric Co. .....Pittsburg, Pa.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Marine Iron Works.....Chicago.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P.....Winthrop Harbor, Ill.

LIFE PRESERVERS, LIFE BOATS, BUOYS.
Armstrong, Cork Co.....Pittsburg.
Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, D. .....New York

LIGHTS, SIDE AND SIGNAL.
Russell & Watson .....Buffalo.

LOGS.
Nicholson Ship Log Co ..... Cleveland.
Walker & Sons, Thomas ....Birmingham, Eng.
Also Ship Chandlers.

LUBRICATING GRAPHITE.
Dixon Crucible Co., Joseph..Jersey City, N. J.

LUBRICATORS.
Crane Co. .....Chicago.
Lunkenheimer Co. .....Cincinnati.

LUMBER.
Martin-Barriss Co.....Cleveland.

MACHINISTS.
Chase Machine Co.....Cleveland.
Hickler Bros. .....Sault Ste. Marie, Mich.
Lockwood Mfg. Co.....East Boston, Mass.

MACHINE TOOLS (WOOD WORKING).
Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.
Hickler Bros. .....Sault Ste. Marie, Mich.

MARINE RAILWAYS, BUILDERS OF.
Crandall & Son, H. I....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.
Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.
American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works ..Detroit.
Sturtevant, B. F. Co.....Hyde Park, Mass.

METALLIC PACKING.
Katzenstein, L. & Co.....New York.

METAL POLISH.
Bertram's Oil Polish Co.....Boston

MOTORS, GENERATORS—ELECTRIC.
Fisher Electrical Works.....Detroit.
General Electric Co.....Schenectady, N. Y.
Sturtevant, B. F. Co.....Hyde Park, Mass.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

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Buyers' Directory of the Marine Trade.—*Continued.*

NAUTICAL INSTRUMENTS.
Ritchie, E. S., & Sons.....Brookline, Mass.

NAVAL ARCHITECTS.
Hynd, Alexander .....Cleveland.
Kidd, Joseph.....Duluth, Minn.
Kreer & Parsons.....Chicago.
Lovejoy, H. O.....Buffalo.
Matteson & Drake.....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Wood, W. J.....Chicago.

OAKUM.
Stratford, Oakum Co.....Jersey City, N. J.

OIL ENGINES.
Mietz, Aug. .....New York.

OILS AND LUBRICANTS.
Dixon Crucible Co., Joseph..Jersey City, N. J.
Standard Oil Co.....Cleveland.

PACKING.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Katzenstein, L. & Co.....New York.
New York Belting & Packing Co...New York.

PACKING TOOL.
Matteson & Drake .....Philadelphia.

PAINTS.
Baker, Howard H. & Co.....Buffalo.
Carbolineum Wood Preserving Co....Milwaukee.
New Jersey Zinc Co.....New York.
Upson-Walton Co. .....Cleveland.

PATTERN SHOP MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PILE DRIVING AND SUBMARINE WORK.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.. .....Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co., ...Duluth, Minn.
Parker Bros. Co., Ltd.....Detroit.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H...Milwaukee.
Sullivan, M. .....Detroit.

PIPE, WROUGHT IRON.
Bourne-Fuller Co.....Cleveland, O.
Crane Co. .....Chicago.
Macbeth Iron Co.....Cleveland.
Reading Iron Co.....Reading, Pa.

PLANING MILL MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.
Bourne-Fuller Co.....Cleveland, O.
Otis Steel Co.....Cleveland.
Reading Iron Co .....Reading, Pa

PRESSURE REGULATORS.
Kieley & Mueller .....New York.
Ross Valve Co.....Troy, N. Y.

PROPELLER WHEELS.
American Ship Building Co.....Cleveland.
Atlantic Works .... East Boston, Mass.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Fore River Shipbuilding Co.....Quincy, Mass.
Great Lakes Engineering Works.. Detroit.
Hyde Windlass Co.....Bath, Me.
Lockwood Mfg. Co.....East Boston, Mass.
Marine Iron Works ..... Chicago.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co..... .....Newport News, Va.
Roelker, H. B.....New York.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp & Sons Co., J. E.....Trenton, N. J.
Trout, H. G.....Buffalo.

PROJECTORS, ELECTRIC.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co..... ..... Pittsburg, Pa.

PUMPS FOR VARIOUS PURPOSES.
Blake, Geo. F., Mfg. Co.....New York.
Great Lakes Engineering Works Detroit.
Marine Iron Works .....Chicago.
Kingsford Foundry & Machine Works.... ..... Oswego, N. Y.

REFRIGERATING APPARATUS.
Great Lakes Engineering Works.....Detroit.
Roelker, H. B. .....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.
Great Lakes Register .....Cleveland.
Record of American & Foreign Shipping.. .....New York.

REPAIRS—ENGINE AND BOILER.
(See also Boiler Manufacturers and Engine Builders.)
Georgian Bay Engineering Works..... .....Midland, Ont.

RIVETS, STEEL FOR SHIPS AND BOILERS.
Bourne-Fuller Co.....Cleveland, O.

SAFETY VALVES.
American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co.....Boston.
Crane Co. .....Chicago.
Lunkenheimer Co. .....Cincinnati.

SAIL MAKERS.
American Canvas & Tarpaulin Corp ....Buffalo.
Baker, Howard H. & Co.....Buffalo.
Upson-Walton Co.....Cleveland.

SALVAGE COMPANIES.
See Wrecking Companies.

SEARCH LIGHTS.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co..... .....Pittsburg, Pa.

SHEARS.
See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.
Bourne Fuller Co.....Cleveland, O.
Otis Steel Co.....Cleveland.
Reading Iron Co.....Reading, Pa.

SHIP BUILDERS.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Bertram Engine Works Co., Ltd.Toronto, Can.
Buffalo Dry Dock Co.....Buffalo.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Chicago Ship Building Co.....Chicago.
Detroit Ship Building Co.....Detroit.
Fore River Shipbuilding Co.....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Maryland Steel Co.....Sparrows Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co..... .....Newport News, Va.
New York Shipbuilding Co.....Camden, N. J.
Roach's Ship Yard .....Chester, Pa.
Shipowner's Dry Dock Co.....Chicago.
Smith & Son, Abram.....Algonac, Mich.
Willard, Chas. P. & Co.Winthrop Harbor, Ill.

SHIP CHANDLERS.
American Canvas & Tarpaulin Corp .... Buffalo.
Baker, Howard H. & Co.. .....Buffalo.
Marine Mfg. & Supply Co.....New York.
Upson-Walton Co.....Cleveland.

SHIP DESIGNERS.
Kidd, Joseph..... Duluth
Kreer & Parsons..... Chicago
Matteson & Drake..... Buffalo
Rice & Lovejoy..... Buffalo
Steel, Nacey & Hynd..... Cleveland
Wood, W. J..... Chicago

SHIP LANTERNS AND LAMPS.
Russell & Watson .....Buffalo.

SHIP TIMBER.
Martin-Barriss Co.....Cleveland.

SMOOTH-ON COMPOUND, FOR REPAIRS.
Smooth-On Mfg. Co.....Jersey City, N. J.

STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.
Falls Hollow Staybolt Co..Cuyahoga Falls, O.
Reading Iron Co.....Reading, Pa.

STEAM VESSELS FOR SALE.
Gilchrist & Co., C. P. .....Cleveland.
Holmes, Samuel .....New York.
Lester, S. S.....Quebec, Can.
McCarthy, T. R.....Montreal, Can.

STEAMSHIP LINES, PASS. AND FREIGHT.
American Line .....New York.
Anchor Line .....Buffalo.
Boston Steamship Co.....Boston.
International Mercantile Marine Co..... ..... Philadelphia.
New York & Cuba Mail S. S. Co..... New York.
Red Star Line .....New York.
United Fruit Co .....Boston.

STEEL CASTINGS.
Otis Steel Co.....Cleveland.

STEERING APPARATUS.
American Ship Building Co.....Cleveland.
Chase Machine Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Hyde Windlass Co.....Bath, Me.
Marine Mfg. & Supply Co.....New York.
Moulton Steering Engine Co.....New York.
Sheriffs Mfg. Co.....Milwaukee.

SUBMARINE DIVING APPARATUS.
Morse & Son, A. J.....Boston.
Schrader's Son, A.....New York.

SURVEYORS, MARINE.
Gaskin, Edward .....Buffalo.
Hynd, Alexander .....Cleveland.
Lovejoy, H. O.....Buffalo.
Matteson & Drake .....Philadelphia.
Parker Bros. Co., Ltd.....Detroit.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Steel, Adam .....Cleveland.
Wood, W. J.....Chicago.

TARPAULINS.
American Canvas & Tarpaulin Corp ....Buffalo.

TESTS OF MATERIALS.
Hunt, Robert W. & Co.....Chicago.
Lunkenheimer Co .....Cincinnati, O

TILING, INTERLOCKING RUBBER.
New York Belting & Packing Co...New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.
Watson-Stillman Co.....New York.

TOOLS, WOOD WORKING.
Atlantic Works, Inc.....Philadelphia.

TOWING MACHINES.
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Chase Machine Co.....Cleveland.

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Kieley & Mueller .....New York.
Sturtevant Co., B. F., ...Hyde Park, Mass.

TRUCKS.
Boston & Lockport Block Co.....Boston.

TUBING, SEAMLESS.
Shelby Steel Tube Co.....Pittsburg, Pa.

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Ashton Valve Co. ..... Boston.
Crane Co. ..... Chicago.
Jenkins Bros. ..... New York.
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Lunkenheimer Co. ..... Cincinnati.
Ross Valve Co. ..... Troy, N. Y.

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Ross Valve Co. ..... Troy, N. Y.

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Detroit White Lead Works ..... Detroit.
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Brown & Co. ..... Buffalo.
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Fleming & Co., E. J. ..... Chicago.
Gilchrist & Co., C. P. ..... Cleveland.
Hall, John B ..... Buffalo.
Helm & Co., D. T. ..... Duluth.

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Holmes, Samuel ..... New York.
Hutchinson & Co. ..... Cleveland.
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McCarthy, T. R. ..... Montreal.
Mitchell & Co. ..... Cleveland.
Parker Bros. Co., Ltd. ..... Detroit.
Prindiville & Co. ..... Chicago.
Richardson, W. C. ..... Cleveland.
Sullivan, D. & Co. ..... Chicago.

WATER GAUGES.

Bonner & Co., Wm. T. ..... Boston
Lunkenheimer Co. ..... Cincinnati, O.

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"Long Arm" System Co ..... Cleveland.

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DeGrauw, Aymar & Co. ..... New York.
Upson-Walton Co. ..... Cleveland.

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American Ship Building Co. ..... Cleveland.
Hyde Windlass Co. ..... Bath, Me.
Marine Mfg. & Supply Co. ..... New York.

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Parker Bros. Co., Ltd. ..... Detroit.

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Drein, Thos. & Son. ..... Wilmington, Del.
Georgian Bay Engineering Works. ..... Midland, Ont.
Truscott Boat Mfg. Co. ..... St. Joseph, Mich.
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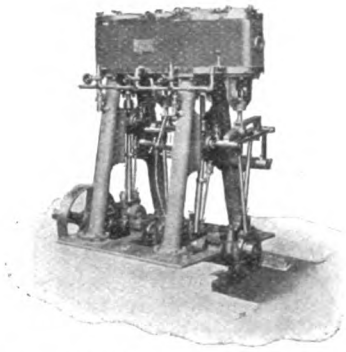

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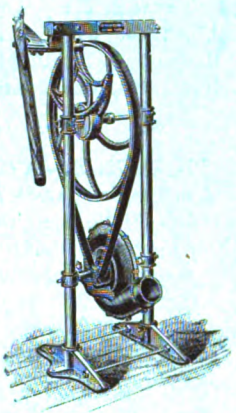

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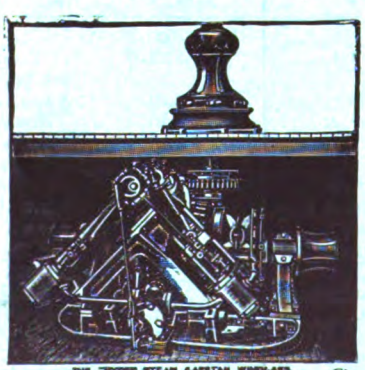

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